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American Cinematographer



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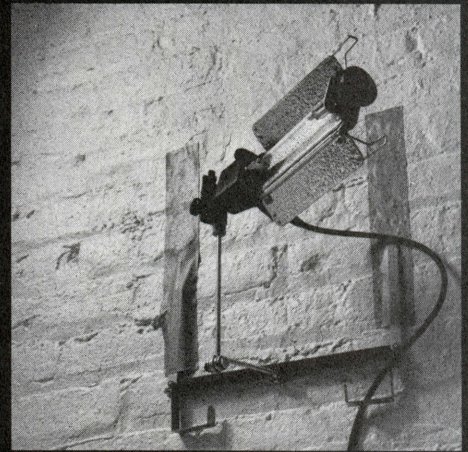
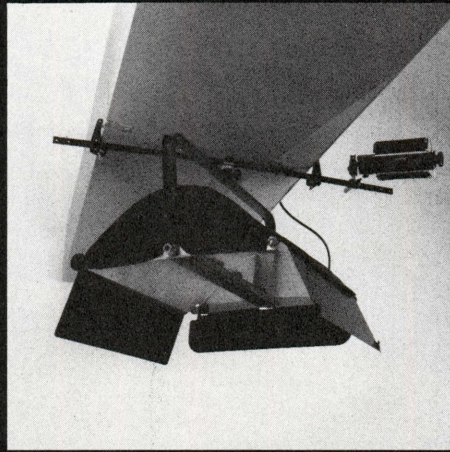
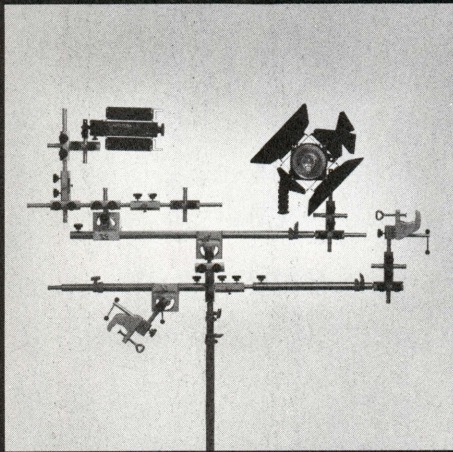
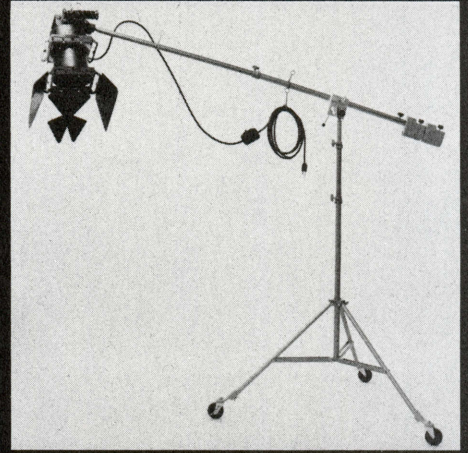
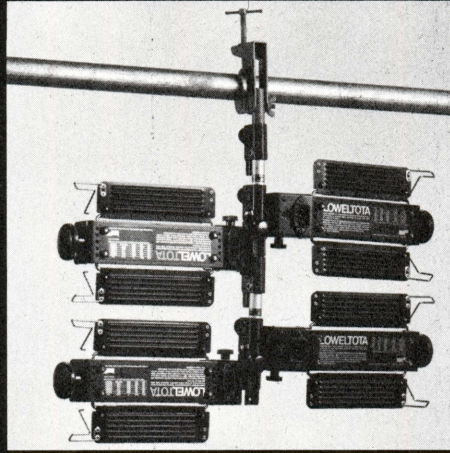
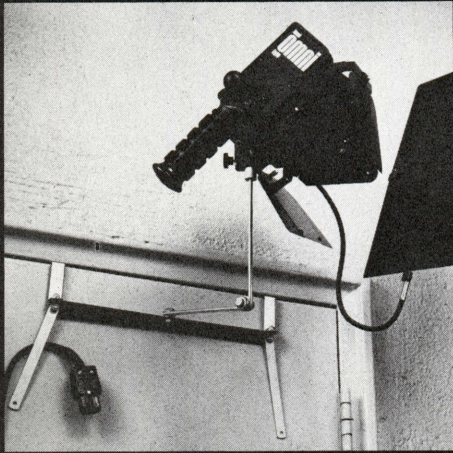
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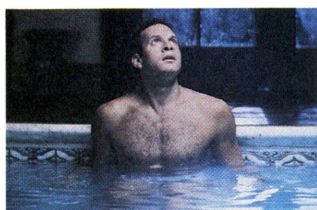
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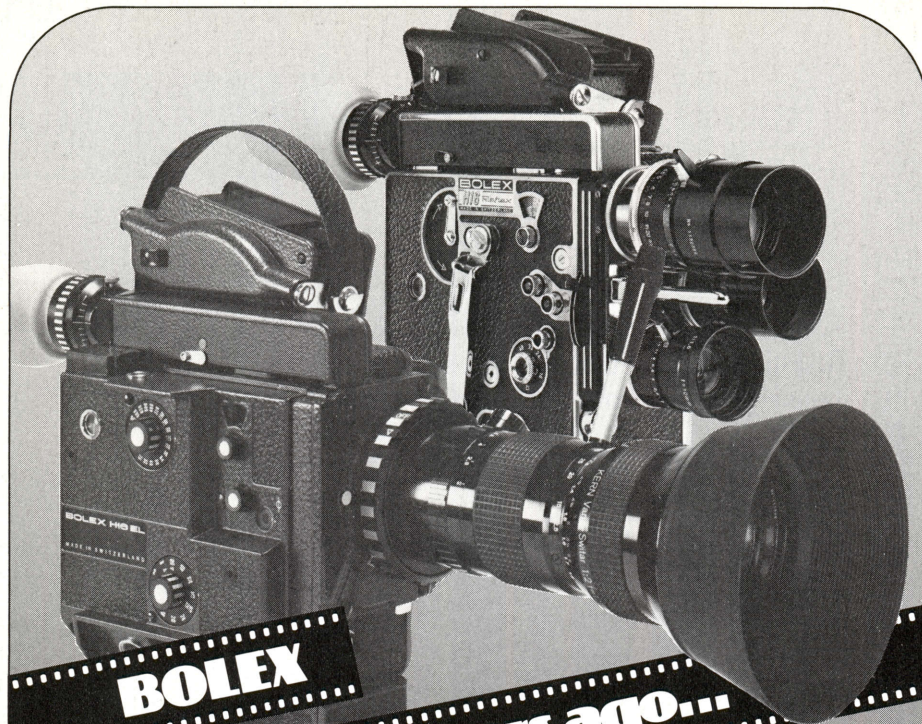


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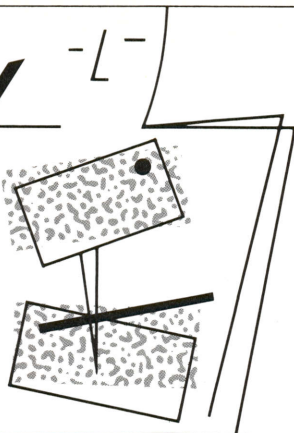


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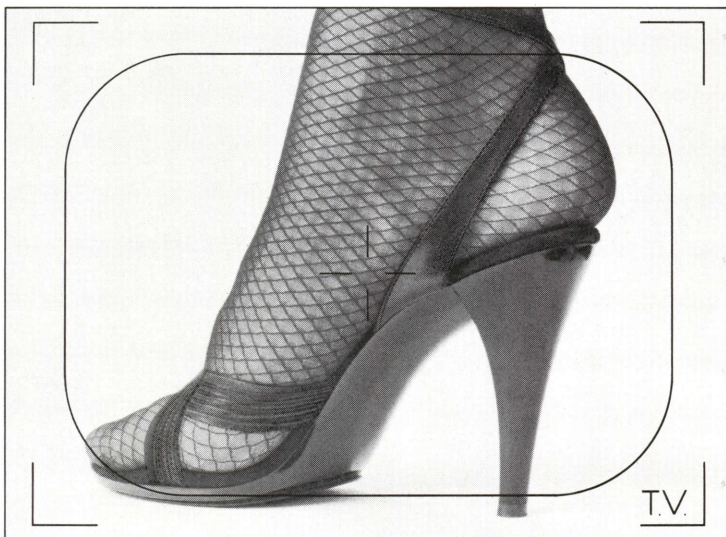
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Letters

About "Wings"

I very much enjoyed George Turner's article on *Wings* in the April issue and, if I may, would like to offer a few small corrections. In the course of my research for the book *William A. Wellman* (1983, Scarecrow Press), I accumulated mountains of material on the making of the film.

First, John Monk Saunders did not write a novel called *Wings* until after the film had been made. The book (still fairly easily found in second-hand bookshops) is what we would now call a "novelization" of the script. Saunders goes so far as to mention Wellman on page 122 of the book, something he isn't likely to have done before the filming.

Turner says that Wellman was "young and not very experienced"; in fact, *Wings* was the director's twelfth feature. Still rather untried at Paramount, it's true, but already a capable and confident filmmaker.

Dick Grace's book is titled *I Am Still Alive* and features a brief foreword by Wellman. Grace did make a cameo in *Wings*, but not as the flyer who flinches at the French officer's kiss — that was pilot Sterling Campbell. And speaking of Dick Grace, I feel that we should take the "broken neck" story (in which Grace breaks the cast off his neck after six weeks instead of the year doctors demanded) with a grain of salt. Grace wasn't a superman and there's no reason to believe that he could heal himself in this miraculous fashion.

Turner mentions the cameos of Grace and pilot Frank Clarke and I would add that *Wings* is studded with such appearances. Wellman appears as a doughboy who is killed during the Battle of St. Mihiel (his title reads, "Attaboy! Them buzzards are some good after all!", in reference to the attacking American planes). Propman (later assistant director) Charles Barton

(himself to become a director in the mid-30's) is the little soldier who is hit by Clara Bow's ambulance. Wellman's wife Margery and daughter Gloria are the French peasants in the house where Armstrong (Richard Arlen) dies. Saunders puts in a cameo as does virtually the entire line-up of stunt flyers and many of the officers from Kelly Field.

Last, Turner's reference to the special boom which Wellman and Perry used in the Paris cafe scene is a bit misleading. The director did, in fact, swear "never to do it again"; it's a promise he certainly didn't keep as the lengthy and complex tracking shots in *Beggars of Life*, *The Man I Love*, *Woman Trap*, *Dangerous Paradise*, *The Public Enemy* and several others of his features of the next two or three years made abundantly clear.

—Frank Thompson
Atlanta, Georgia

More About "Wings"

Congratulations for your splendid article "Wings — Epic of the Air". The flawless attention to factual accuracy and your fascinating prose resulted again in the type of layout that keeps us anxious for the next A.C. issue.

—Karl Malkames, ASC
Scarsdale, N.Y.

We Apologize

In an article from our May issue, "Original Negative Motion Control Composites for V" credit for the writing was inadvertently omitted. The author is Adam Berger, 25-year-old graduate of the Art Center College of Design in Pasadena, who holds a BSA in film. He is currently working as a special effects cameraman for David Stipes Productions, in North Hollywood, CA.

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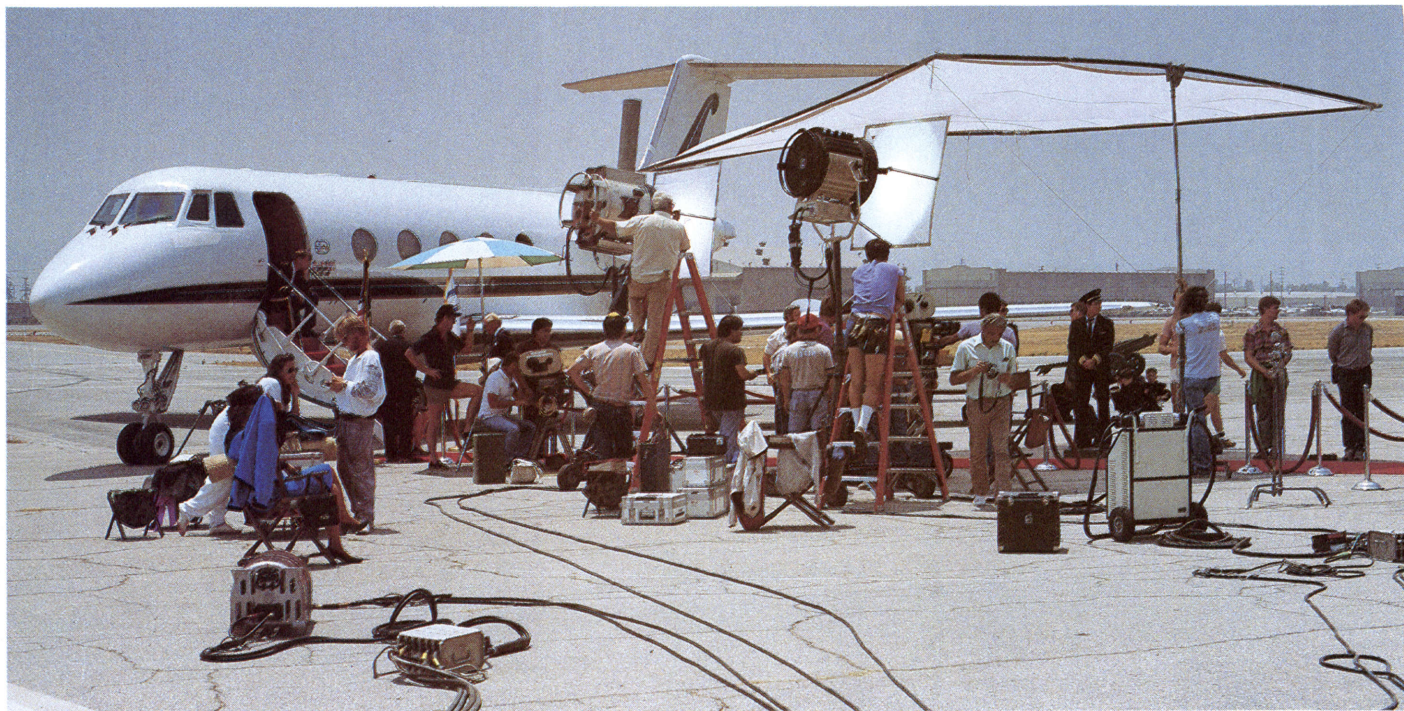


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The Bookshelf

The film industry's headlong rush into electronics gives particular timeliness to a new book, **Electronic Cinematography**. Written by cameraman Harry Mathias, an authority on the merging of film and video, and Richard Patterson, it approaches the problem from the cameraman's point of view, rather than the engineer's. The book offers an expert and thorough analysis of video's current status and its potential in technology and esthetics, and discusses equipment and its utilization in practical terms. It also goes a long way toward de-mystifying video and laying the groundwork for a truly creative use of the medium (*Wadsworth, Belmont, CA. \$22.95*).

A perceptive portrait of a top director, Andrew Horton's **The Films of George Roy Hill** spotlights the characteristics of Hill's work through interviews with Hill himself and with actors and writers. He is shown to be a master storyteller, infusing his films, such as *The Sting* and *The Little Drummer Girl*, with an ironic, bittersweet vision of life (*Columbia U. Press, New York, \$25*).

Graham Greene's 60-year involvement in cinema as author, adapter, scriptwriter and film critic is assessed by Quentin Falk in **Travels in Greeland**. The rationale for Greene's generally disenchanting views are discerningly analyzed in this thoughtful study (*Merimack, Salem, NH, \$22.95*).

In **Martial Arts Movies**, the ethnic origins and prodigious international popularity of kungfu, karate and similar combat sports are traced by Richard Meyers et al. with zestful appreciation of the films and their charismatic stars (*Citadel, Secaucus, NJ, \$19.95*).

The long-time expertise of L. B. "Bill" Abbott, ASC, in designing and executing the sophisticated technology involved in such spectacular

films as *The Towering Inferno*, *The Poseidon Adventure* and *Tora! Tora! Tora!* is told in explicit and fascinating detail in his colorful autobiography, **Special Effects – Wire, Tape and Rubber Band Style**, Abbott's unique inventiveness and originality, applied over 50 years in hundreds of major productions, blanket the whole field of visual movie magic (*ASC, Hollywood, \$29.95*).

Leonard Maltin's **The Disney Films**, updated and expanded, discusses knowledgeably every Disney Studio movie – cartoons, features, TV shows – from the first Mickey Mouse *Plane Crazy* (1928) to last year's *Splash!*. A full-color collection of comics, **Donald Duck and His Nephews**, points up Disney's influence in yet another sphere of popular entertainment (*Crown, New York, \$12.95; Abbeville, New York, \$25*).

In **The Great Cartoon Directors**, Jeff Lenburg shows the contribution to animated shorts of such creative artists as Friz Freleng, Dave Fleischer, Hanna and Barbera, and Chuck Jones. Their personal style and technical innovations gave decisive impetus in the 30s and 40s to the art of cartooning (*MacFarland, Box 611, Jefferson, NC, \$16.96*).

The tragic and sometimes suspicious deaths of Hollywood celebrities, from Thelma Todd to John Belushi, are recapped by Laurie Jacobson in **Hollywood Heartbreak** with proper regard for popular mythology (*Simon & Schuster, New York, \$8.95*).

Top filmmakers offer articulate and challenging opinions on various aspects of their craft in **Film Forum**, assembled by researcher Ellen Oumano. Directors Altman, Bertolucci, Fassbinder, Forman, Scorsese, cameraman Nestor Almendros, ASC, and documentarians Barbara Kopple and Al Maysles are among the 35 personalities talking

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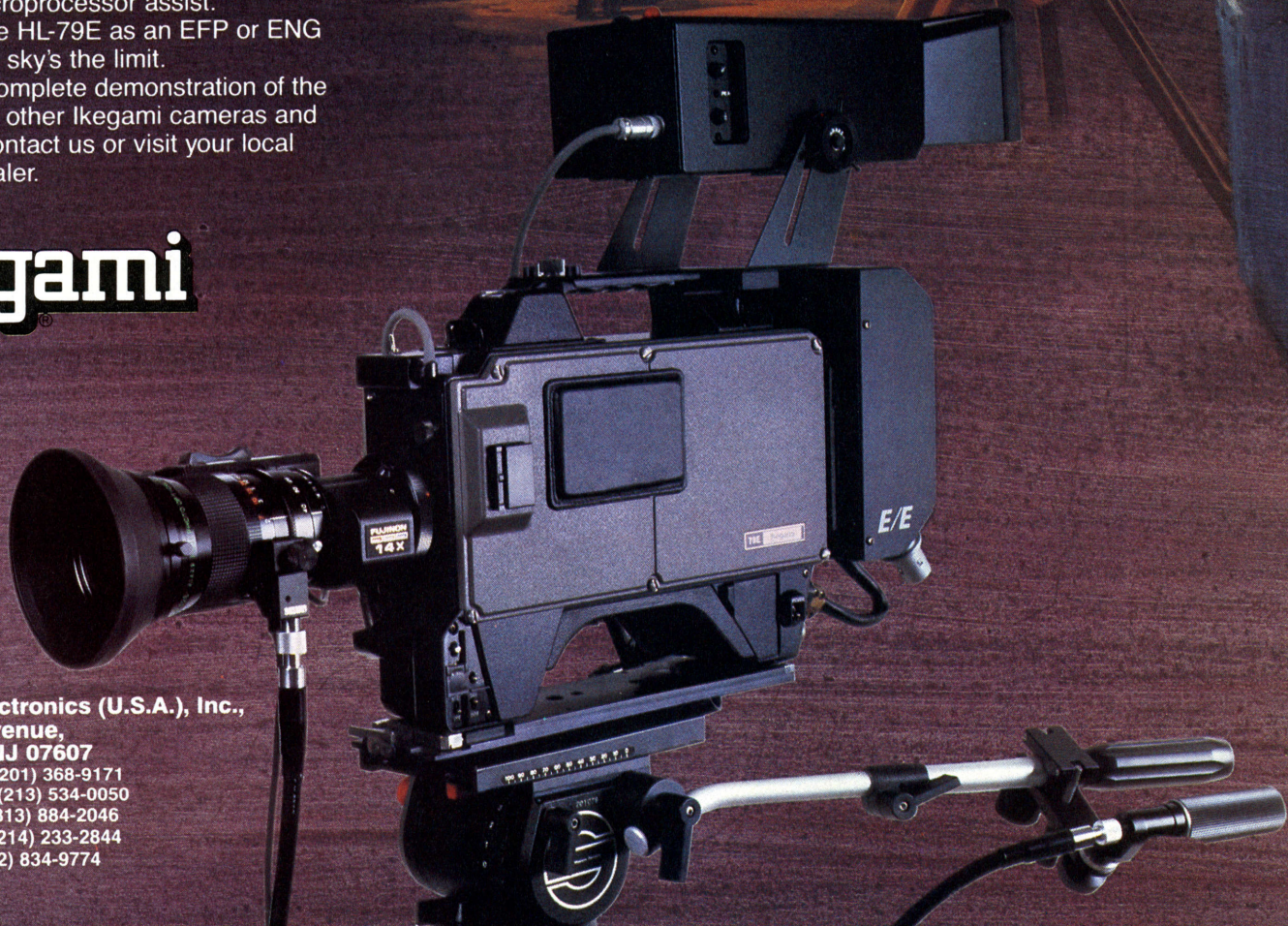
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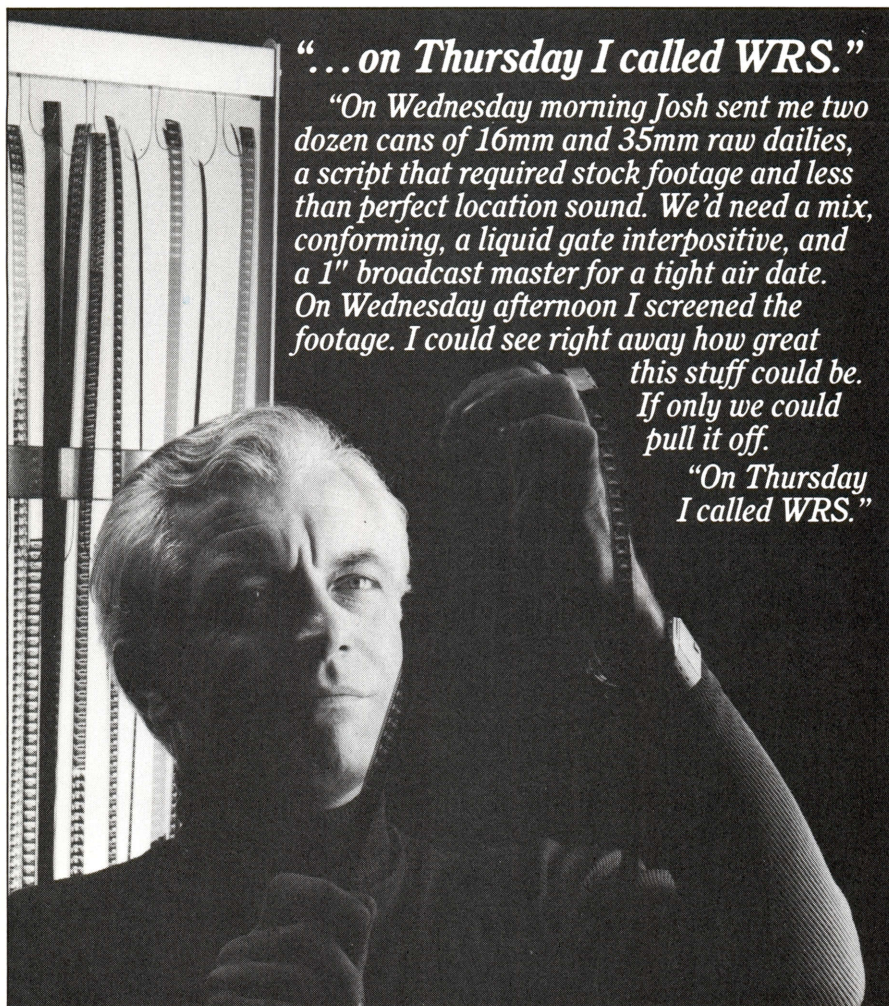
For a complete demonstration of the HL-79E and other Ikegami cameras and monitors, contact us or visit your local Ikegami dealer.

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freely about the esthetics, technique, culture and social impact of contemporary cinema (*St. Martin's, New York, \$15.95*).

Over 600 features, television movies and series dealing with some facets of powered flying are surveyed in Stephen Pendo's lively volume, **Aviation in Cinema**. Another popular film genre, teenagers' experience with life, is appraised by David M. Considine in **The Cinema of Adolescence**, a thoughtful and well-researched survey (*Scarecrow, Metuchen, NJ, \$28.50; McFarland, Box 611, Jefferson, NC, \$19.95*).

A pioneer of African film is discussed by Françoise Pfaff in **The Cinema of Ousmane Sembene**. Her well-documented study dispels the stereotyped notions of exoticism and mystery to reveal the essential realism that Sembene and other African filmmakers bring to their work (*Greenwood, Westport, CT, \$27.95*).

The 35th annual edition of John Willis' pictorial and statistical record, **Screen World 1984**, includes all movies released in the USA during the previous year. Thorough and dependable, its 10,000 entries and 1000 stills provide full data on films, personalities and other relevant facts (*Crown, New York, \$19.96*).

A valuable reference work, Anthony Slide's **Selected Film Reviews 1951-1960** is the 7th and final volume of the 1896-1960 survey of significant movie critiques. It covers some 150 U.S. features (*The African Queen, The Caine Mutiny, Psycho*, etc.) reviewed in selected publications (*Scarecrow, Metuchen, NJ, \$15*).

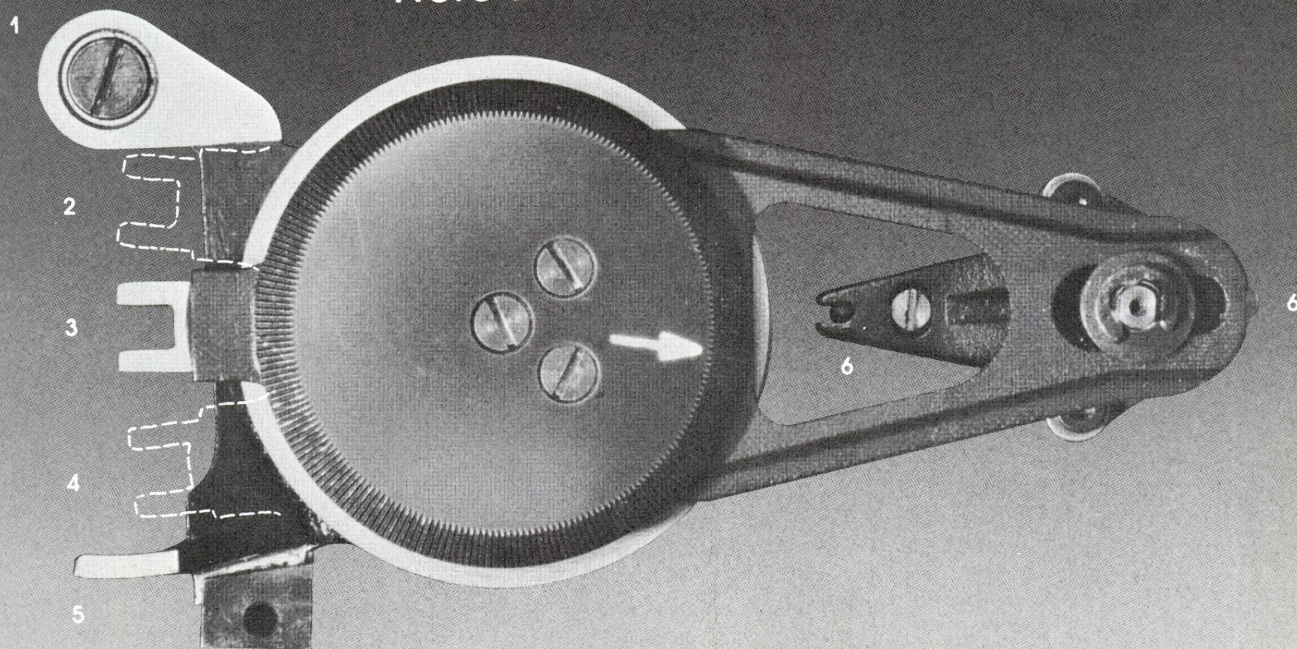
David Downing's insightful biography, **Marlon Brando**, examines the complex personality of an actor whose distrust of and attractiveness to women created the vortex of a chaotic career (*Stein & Day, New York, \$17.95*).

Blonde actress Britt Eklund's **Sensual Beauty** ingeniously combines grooming advice and common sense precepts for achieving confidence in life, love, fun — and sensuality (*Merrimack, Salem, NH, \$12.95*). ■

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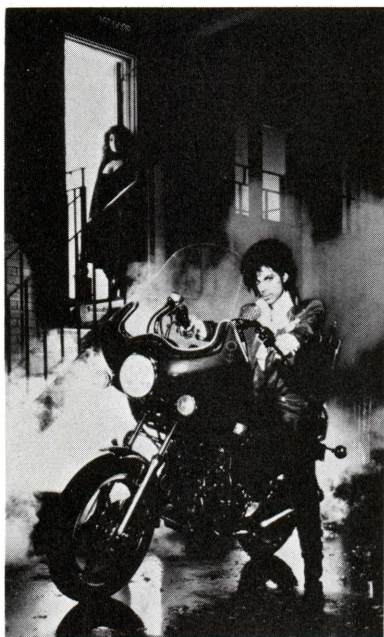
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"Smoke Gets in Your Eyes. . ."



Rosco Laboratories, pioneers in the inventive use of fabrics, filters, gels, paints and breakaway bottles, won a scientific and engineering award from the Academy of Motion Picture Arts and Sciences this year for smoke. Smoke is that timeless entertainment concoction used to simulate fog, surround with mystery, or to glamourize production scenes. The resultant effects on screen are beautiful, and until now—potentially deadly.

Rosco's smoke—in part developed by Gunther Schaidt of Germany—is harmless, non-toxic, non-irritating and non-flammable. Its uses in theater, opera, ballet, music videos, discotheques, television and movie productions are becoming legend. *Purple Rain*, *Ghostbusters*, *The Flamingo Kid*, *Flashdance* and *The Right Stuff* all used Rosco smoke in varied effects.

Used theatrically for nearly five years, Rosco's smoke fluid and smoke machines are featured in hit Broadway shows such as *Dreamgirls* and *Cats*. It was used in The Metropolitan Opera's *Flying Dutchman* and

on rock concert stages with the group *Kiss*. It was most recently seen in the *Michael Jackson Victory Tour*.

Historically, there have been two basic approaches for generating smoke in the film industry: pyrotechnic smoke and oil smoke. Smoke pots or smoke bombs have been used to create realistic smoke effects, and kerosene or mineral oil have been vaporized in aerosol generators. Petroleum-based fluids produce an oily cloud. When inhaled, the oil coats the lungs. The body's normal filtering system is clogged and a residue can build up resulting in "oil pneumonia" and other serious conditions.

"The benefits are really a list of what it doesn't do," says Stan Miller, president of Rosco Labs, who shared the award with Schaidt. "Dancers can dance and people can walk without slipping and sliding. This smoke is non-flammable. This smoke has no oil and cannot be ignited."

The substance does not have a petroleum base and contains no chemical salts. Previous smoke systems irri-

tated the eyes, throat and lungs as actors and crews can attest. Up to 100,000 cubic feet of smoke can be produced from one liter of fluid. Three gallons would be enough to fill St. Patrick's Cathedral.

Some new and unexpected applications of the new smoke fluid include: fire departments using it nationwide to simulate smoke conditions for training sessions. When the new Boeing 767 was rolled out in Washington, DC, it emerged through a curtain of Rosco-made clouds. In fact, the recent Academy Awards show used Rosco smoke extensively during its musical presentations. Rosco received an award from the Academy in 1974 for its Cinegel line of filters for lighting.

Rosco Laboratories, Inc., founded 75 years ago, has global offices that include Hollywood, London, Madrid, Toronto, and Tokyo, and is headquartered in the New York City suburb of Port Chester. For further information, contact Rosco at 36 Bush Avenue, Port Chester, New York 10573; telephone (914) 937-1300. *continued*

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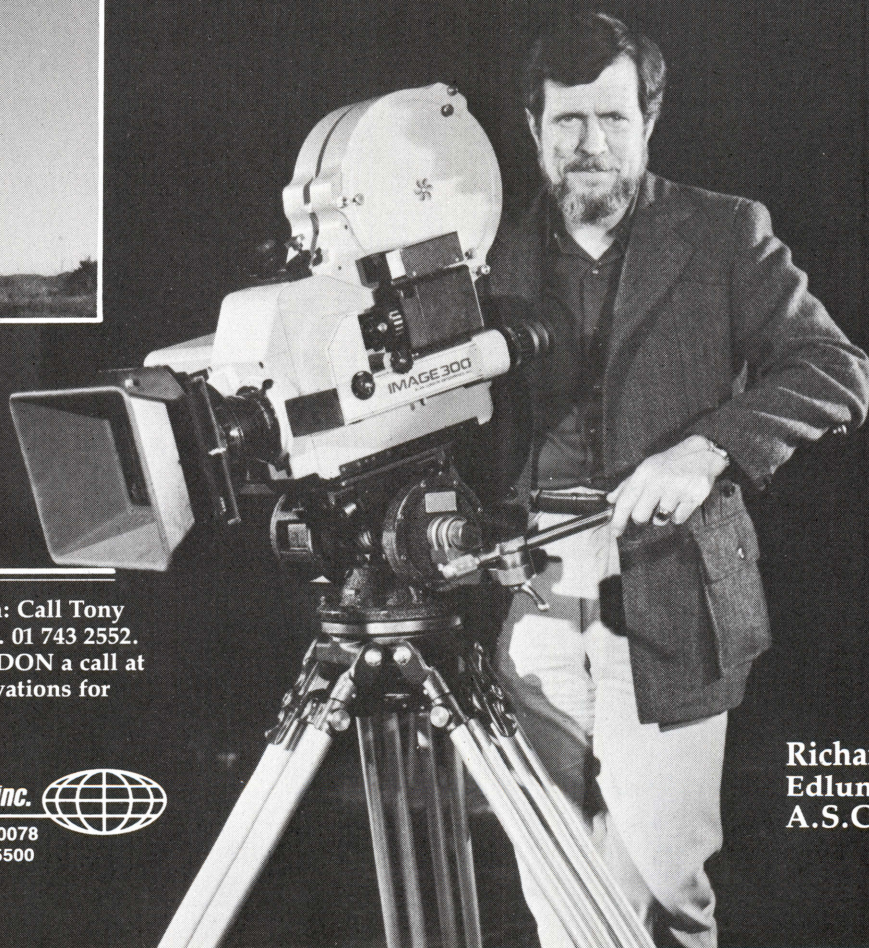
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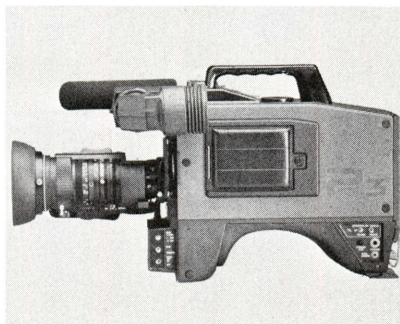
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New Video Camera

Panasonic Industrial Company has unveiled a new color video camera developed to withstand the toughest professional applications. The WV-890 features sturdy construction and advanced technology, which delivers high quality images.

The WV-890 incorporates ⅝-in. Plumbicon (S4803) tubes for natural color reproduction, while an 8-bit digital memory locks in images and color balance when shooting for long periods of time. To provide stable operation, the camera uses a middle-index f1.4 prism optics system.

The WV-890 also offers high sensitivity and clear images in low light – an important benefit for professional operation. It employs a low-noise preamp with signal-to-noise ratio of 59dB and one touch gain switch, allowing the selection of either +9 or +18dB. As a result, it produces sharp pictures in lighting as low as 4 footcandles (+18dB at f1.4). In addition, image boundaries are well defined due to a 2-line vertical aperture correction device. Horizontal resolution is as high as 600 lines at center. Additional standard features include Y-I/Q output for M-format recorders, auto beam (8x), adjustable knee and gamma correction circuits, LED diagnostics and serial data transmission to a RCU.

A durable, lightweight die-cast aluminum chassis protects the camera's circuitry against outside electrical interference and other potential problems. Its compact design allows the mobility needed for prolonged hours of operation.

To facilitate easy operation and enhance picture quality, the camera has built-in automatic circuits. One-touch functions allow split-second maneuvering. For instance, the auto-white and black balances can be set and

stored in memory with the push of a button. Also, an auto-iris function makes quick adjustments for shooting in variable lighting conditions. In case of excessive light, it superimposes a gray shaded area over the portion of the picture requiring attention.

Finally, with the addition of an optional remote control unit (RCU), 5-in. viewfinder and up to 100 ft. of cable, the camera is effective in the studio. The RCU allows complete control of the master pedestal, iris adjustments and all automatic functions as well as manual white and black balance controls. In addition, a standard R-170A genlock sync generator makes the WV-890 compatible with virtually all standard professional VCR systems.

For further information, write Panasonic, One Panasonic Way, Secaucus, NJ 07094.



Geared Tilt Plate

JBK Cinequipt has introduced a new geared tilt plate for Video 16mm and 35mm cameras. This allows you to attain a 90° tilt, rock steady at any degree with cameras up to 80 lbs. The low profile design and sturdy lightweight aluminum makes it easier to handle. The camera mounting plate slides in a dovetail guide with a quick release mechanism in addition to a safety pin device.

The standard camera platform is 4" x 5" equipped with a ⅜-16 or ¼-20 tie-down screw. The base has standard ⅜-6 threaded mounting holes. This unit comes complete with a choice of either the standard sliding camera mounting plate or the version with holes for support rods.

For further information, contact JBK Cinequipt, 5648, Vineland Ave., N. Hollywood, CA 91601. (818) 994-1937.

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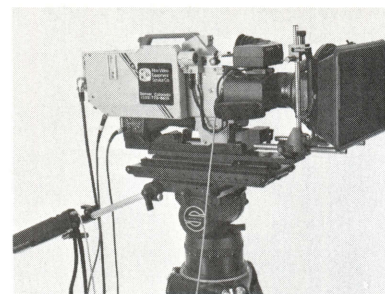
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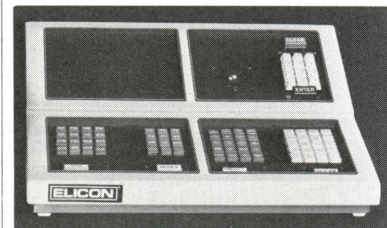


F/V J-6 Zoom Modification

Film/Video Equipment Service Co. (Denver, CO), factory-authorized center for Cinema Products' J-6 zoom control modifications, currently offers this unique zoom lens control system for the following ENG/EFP lenses: Canon J13x9, Canon J18x9, Fujinon A14x9, Fujinon A14x10, Fujinon A12x9, etc., as well as for Angenieux, Canon, Fujinon and Schneider studio/broadcast lenses for use on 1" and 1 1/4" studio cameras.

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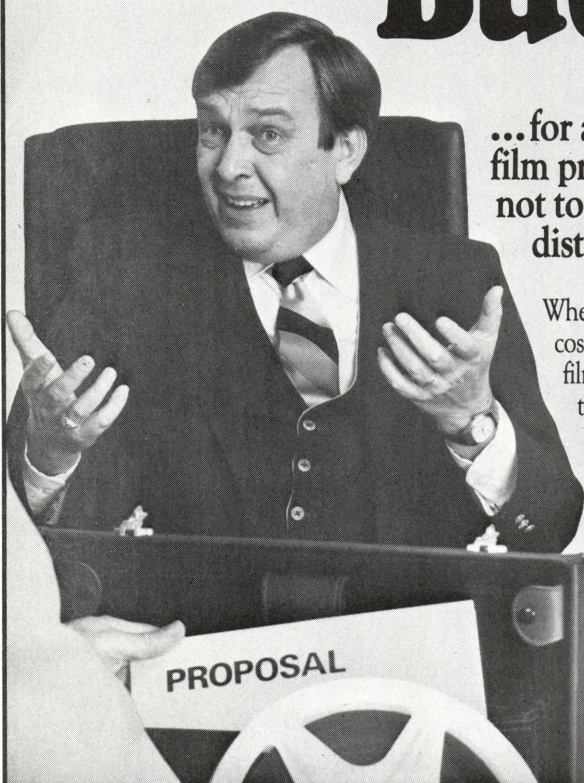


Keyboard Press Release

Elicon announces a major breakthrough in custom keyboard design. Designed to act as an interface between a user-hostile software program and its human operator, this custom keyboard allows quick acclimatizing to difficult tasks. Using changing sequences of flashing lights to "light the way," the IPK-200 directs

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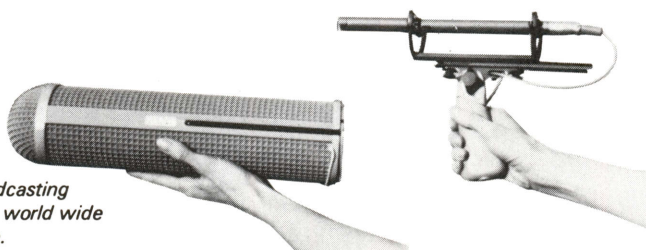
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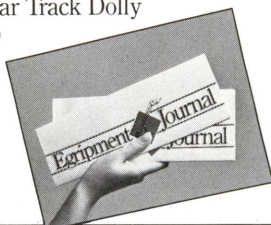


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As the on-board computer of the keyboard is directing the operator, it is also translating the data received from the operator into the "hieroglyphics" of machine language used by the host computer software. The IPK-200 also outputs the data received from the operator via its RS-232 communication port. The simplicity and flexibility of the onboard PolyForth-based software allows the keyboard to be used with almost any computer system and/or software equipped with a RS-232 communication port to greatly enhance both its accuracy and usefulness. Since the internal software of the keyboard outputs data to the host computer in its own language, little, if any, changes are necessary in the host computer's software. Therefore, access to the host computer software is not necessary, in most cases.

Installation of the IPK-200 keyboard is simple. With the IPK-200 keyboard connected to the host computer's present keyboard input, the IPK-200 is put into the "training" mode by inserting the train key into the special training switch. With the IPK-200 keyboard in the train mode, each function is entered in the sequence the operator wants. The host computer code necessary for the desired function is then input to the keyboard via its auxiliary RS-232 communication port. The keyboard stores both the operator's sequence and the host computer's data in its memory. A battery backup allows the data to be held for up to 10 years.

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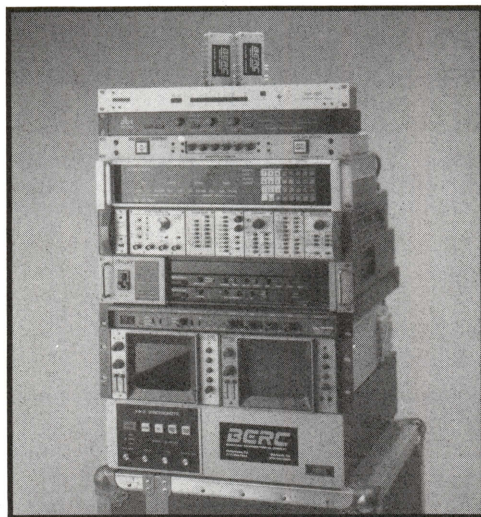
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Registration peg plates may be attached to the table. Rotation speed of the table can be up to approximately one revolution per second. Rotation speed of the compound can be up to approximately 1/3 revolution per second.

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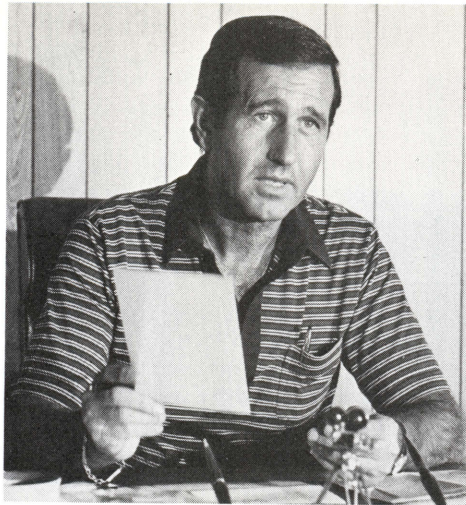
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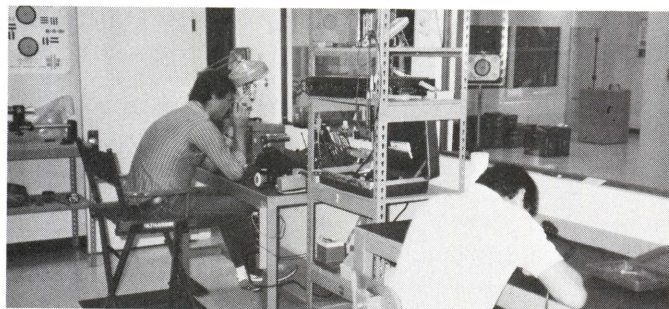
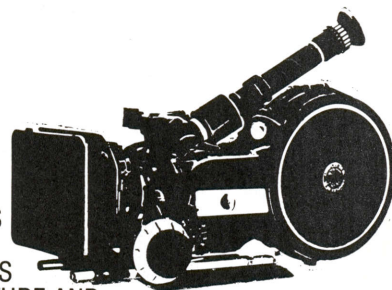
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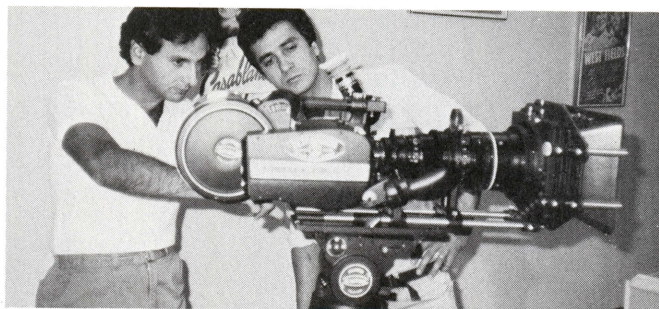


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The Realistic Fantasy of **Lost in America**

by Michael S. Kunkes

Comic Steve Martin has said, "Comedy is not pretty." If that is true, it may also be truthfully said that good photography is not always beautiful photography. Albert Brooks' *Lost in America*, a Geffen Co. release distributed by Warner Bros., is not what one would call a broad comedy. The co-writer, director and star is Brooks, whose films have always been concerned with the often contradictory realities of the world we live in, and with characters who always hover on a fine edge between reality and fantasy, between what they want and what is.

In *Lost in America*, Brooks and co-star Julie Hagerty portray executives David and Linda Howard. They are happily entrenched in their careers, David

at a major advertising agency, Linda at a department store, and are about to move into a new home and price a Mercedes. When David is passed over for a promised vice-presidency and is instead shifted to the New York office on "just another account," he goes bonkers, and in a blind rage, gets himself fired. Together, he and Julie decide to "drop out of society." They liquidate their savings, buy a Winnebago, and set out on the road together to discover America, "Just like in *Easy Rider*," as David says.

Of course, things go wrong, but the speed at which they go wrong is truly appalling. Their first night out of Los Angeles, Linda loses their \$190,000 "nest egg" in a crazed binge in Las

Vegas. Sobered but undaunted, they take up residence in a small-town motor court in the middle of nowhere with nowhere jobs. Suddenly realizing that they haven't really "dropped out" of anything, David decides to eat crow, and drives off to New York and to the future he had been heading for right from the start.

What is the role of a cameraman in an existential comedy like *Lost in America*, a film of long dialogue sequences and largely unglamorous locations? Director of photography Eric Saarinen had photographed two other Brooks features, *Real Life* and *Modern Romance*, and was hesitant at first about taking on another. "I had gotten raves for my work on *The Golden Seal* (American Cinematographer, October, 1983), and I wasn't sure I wanted to do another comedy, especially one that essentially would not appear to be a cameraman's film," said Saarinen, who directs and shoots commercials full-time at Plum Productions in L.A., with partner Chuck Sloan.

Saarinen, however, took on *Lost* for what he termed "a learning experience." "I decided to go out and get the best crew I could, take some chances, and push things to the limit more than I had previously on this type of film." That crew included camera operator Ray De La Motte, who had worked extensively with Gordon Willis; assistant camera Lee Redmond, gaffer Gary Holt and key grip Gary Dodd, whose contribution to the rigging of the Winnebago sequences proved invaluable to the production.

The depiction of reality, or more specifically of reality as seen through the eyes of Albert Brooks, was Saarinen's overriding concern in designing the cinematography for the 50-day shooting schedule, only several of which took place on a stage. Locations included Century City, Canyon Country and the San Fernando Valley in the Los Angeles area; the Desert Inn in Las Vegas; Hoover Dam; and finally, a

grueling three-week sojourn across the country with a skeleton crew and cast to shoot the climactic three-minute montage sequence that winds up on the New York City streets.

Saarinén considered the overall staging of the production to be his primary consideration, and he worked closely with Brooks and Ray De La Motte throughout the pre-pro and shooting. "In discussing the camera movements, Ray and I decided to play things wide enough so that every shot could create its own composition, and so that people could move within the shot and play the frame. We wanted to let the staging derive from the story, and not do standard television-type coverage, which is largely irrelevant to storytelling. Because, if you've staged things well and picked the proper angles, then those angles will show what is important to the scene."

Saarinén worked with a standard Panavision lens package, and to add to what one reviewer called the "harrowing believability" of the film, Saarinen kept to wide, but not too wide, lenses for the entire shoot. "We wanted to include the actors in their environment, not separate them from it. The human eye basically works like a 35mm lens, so we shot all our masters at 29mm and all our close-ups at 40. We picked those lenses based on the limitations of depth of field and of the motor home's size. With those lenses, we didn't need as much light, which made it a lot easier on the actors in those cramped quarters. There is hardly any difference between those lenses, and as a result, there were no lens jumps, which can be a disorienting experience in a feature film. The more we stuck with those lenses, the more we felt the audience would feel at ease with what the characters were feeling. It was very close to the human sense of perception."

Long lenses were used only on a few later sequences, and then only judiciously. The first

time one was used was during a short but critical scene in which a man in a big Mercedes pulls up to ask directions of Brooks, who has been reduced to taking a job as a school crossing guard. "This sequence is a turning point in the story," Saarinen explained. "It is the point at which David finally realizes that 'The future IS a bald-headed man from New York,' and that he hasn't really dropped out of anything. We used a standard Panavision 1000mm with a net behind the lens. When we see Brooks' face, there is no depth of field behind or in front of it. We used the same lens when we cut to the Mercedes, and those shots were the exact opposite of everything that had come before them."

Another major instance where Saarinen changed lens compression came during the shooting of the film's final sequence, in

which David arrives in New York and pursues "Brad," his terrified employer, in front of a large office building, to get his job back. "Albert and I wanted to do a reverse on the way Woody Allen sees New York. We wanted it to look blue, cold and impersonal, to give a sense of suffocation around the edges of the frame. So on that shot where he runs after his former nemesis, we used a Panavision 25-500, starting in at 500 and pulling back to 25. It gave us just the feeling we wanted."

That scene was also notable for a technical innovation by Saarinen. Because there was going to be a descriptive crawl during that closing sequence, it was extremely important that the speed and direction of the tilt-up zoom movement be identical to the movement of the crawl, which always moves at a steady pace. By



Opposite: *Albert Brooks and Julie Hagerty in a moment of short-lived elation in the Desert Inn casino. Below:* *DP Eric Saarinen used a dozen movable slot machines and reflective mylar sheets to enhance the gaudy casino ambiance. Left:* *Practicals were hung underneath chinese lanterns on dimmers to soften the light source as Brooks and Hagerty planned their trip.*





Above: Huge, muslin-wrapped "artificial moon" hung from a crane lit night scenes at the Safford motor court.

hand, it would have been an impossible task on such a long tilt-up move. Saarinen removed the wheel assembly from the rear Panahead zoom motor in its place. "The motor gave us control over the tilt in a repeatable situation," said Saarinen. "We were able to set it to do the move in say, 45 seconds, ten times in a row. The crawl doesn't come on until we've pulled back to show the entire street and skyline, so the tilt up had to move at a steady pace, or else the background and foreground would have been moving at different speeds. It worked out beautifully."

Saarinen's staging technique is illustrated in several additional sequences. In the scene in which David gets himself fired, which consists of 11 pages of rapid-fire, ascerbic comic dialogue, Saarinen's goal was to keep camera movement to a minimum, but at the same time not allow boredom to creep into the long scene. "We planned that scene with single camera coverage from just two master angles, to keep the perspectives fresh and the relationships dynamic. We shot our master from an angle behind the three actors, and shot each close-up from the same distance and height, which was a way of keeping it unobtrusive. About five pages into the scene, we dollied across the proscenium line to the other side of the room, and shot the second half of the scene from that position. It's an extremely funny

scene, lit with just natural light from the windows."

At Hoover Dam, one of the few Steadicam sequences in the film takes a documentary-style look at Brooks and Hagerty arguing over the loss of their "nest egg." "What I liked about that scene," Saarinen recalled, "was the point at which, angry at both herself and at her husband, she puts out her thumb to hitch a ride. With the camera behind her, we see a car way over on the right, but we deliberately did not pan over to include the car more centrally, because that would have tipped off the audience which, like Brooks, has no idea that the car is going to stop. If I had adopted a 'privileged camera' angle, that would have been the first giveaway of reality. The situation changes entirely, of course, when the car stops to pick her up."

The fight that ensues between Brooks and the redneck who picks up his wife provided Saarinen with another opportunity to work out some comedic staging. Seen from Hagerty's POV, the actual fight has only one punch thrown, which unfortunately lands square into Brooks' nose, after which the pair pursue each other around the motor home. "Once we decided to do the fight this way, there were several ways we could have covered it," recalled Saarinen. "We could have used a Steadicam to follow them around, or we could have put a camera atop the Winnebago, and then dollied around the back. But the simplest possible way was just to have one camera at the front end of the mobile home, and do a short dolly move from one side to the other, picking up the action as it came around. It was a dynamic way of shooting it, and it didn't get in the way of the dialogue."

Some of Saarinen's most intricate staging involved the night scenes in the Safford motor court. A huge artificial moon, first developed by Haskell Wexler, ASC, for *Coming Home*, and rigged for *Lost in America* by key grip Gary Dodd, was used to shoot the scene in which Brooks and Hagerty return

from their first day's work as a school crossing guard and an assistant manager at a Der Wienerschnitzel, respectively. The moon was trapezoidal in shape, 15 feet across at the bottom, and 12 feet high. Inside the muslin-wrapped frame were a half-dozen 4K HMIs, and it was hung from a 150-foot crane supported by a heavy tractor. When hung at a height of 80 feet, it produced about six foot-candles. "We used it to light a long 150-foot dolly shot of Albert and Julie walking together. It's very rare to see such a long dolly shot at night because of all the lights and rigging required. We keyed at two and a half stops under, hand-walked a little fill, and used the light from the practicals as well. It gave a nice soft moonlit glow."

One cannot talk about the shooting of *Lost in America* without a discussion of the Winnebago which was the film's principal prop and a major character as well. "For me, casting the motor home was just as important as finding the right actors was for Albert," Saarinen said. Three 3-foot "Winnies" were purchased; one for run-bys, one for location interiors, and a third for stage interiors on weather days. All had flat windshields rather than curved ones, with the specific purpose in mind of being able to capture the reflections of the Las Vegas lights at night.

Lighting inside the Winnebago was accomplished by hanging fluorescent tubes through the interior, wherever they didn't interfere with shooting, right down to the frame line sometimes, and these helped provide the impression that the light was coming from the front windows. All the ballasts were moved to the rear of the Winnebago to keep away noise.

Because of the bar separating the two front windows, Saarinen was limited in the camera positions he could use in filming Brooks and Hagerty as they sat side by side driving along. As it turned out, master shots from in front of the Winnebago as they

talked would have made little sense, due to the difference in audio and visual perspectives. "Whenever there was dialogue, it had to look like we were shooting from inside," explained Saarinen. "We also had to keep the blue from the sky off the glass, because that would have been another sure tip-off that we were on the outside filming in."

To film these moving sequences, Saarinen and key grip Gary Dodd built a unique tow rig. "We built a cocoon in front of the Winnie with a front porch made from one-inch plywood, and welded it all together. We mounted two camera positions inside the cocoon, and covered it tightly with black duvatin cloth, so that the only lights inside the cocoon were the diffused HMI's and the fluorescents. The Winnebago as well as the rig were attached by a tow bar to a two-ton truck with a generator, and Albert and Julie, who could only see out of the side windows, had no idea where they were going because everything in front was blacked in. We could have done it on a stage with process shots, but doing it 'on the road' was psychologically important to Albert. Working within the structure of the mobile home was a real challenge."

Saarinen shot *Lost in America* mostly on Kodak 5294, but feels that the stock has its limitations. "You can't really underexpose 5294 like you can with 5247. The 5294 retains shadow detail wonderfully to about three stops under, but then it falls off dramatically. And there is no such thing as a perfect black with 5294, so you have to light everything just a little bit. Nine times out of ten though, you can get away with it, if you've got good overall tonality in the shot."

Saarinen's overall lighting philosophy echoed the entire production design of the film - keep it simple, and keep it real. Saarinen utilized the chiaroscuro principle, contrasting dark-light, dark-light patterns to keep attention focused on the actors, and still include them in the environment by using as few light sources as possible.

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"Film lighting between 1920 and 1975 would use two or three sources to separate people from the backgrounds," explains Saarinen. "To modern cinematographers, that's fake light. When you look for example, at artists like Rembrandt or Vermeer, you only see one source, and you get a better feeling of what direction the light is coming from, and there is also more depth. Albert Brooks hates anything that looks fake, and we tried never to use more than one light source."

Scenes that were not lit by practicals were lit by a source that duplicated the practicals. For example, during the scene at the Howards' kitchen table where they are poring over plans for their trip, Saarinen hung his practical light right underneath a Chinese lantern on a dimmer, a technique he used several times in the film. "The lanterns are easy to pin up, use almost no electricity, and create a nice soft light source."

The lighting in the Desert Inn's "junior bridal suite" scene which serves as the prelude to the couple's losing their money, provides a more intricate example. As Saarinen recalls it, "In the wide shot, we had photofloods above the bedlight that duplicated that kind of light. To soften it up, we taped 1000H paper over the floods, from the ceiling, all the way down the wall. Unfortunately, our room was so small that you were able to see the lights in the frame. So we used a white card to cover part of the frame, and we shaded it with a dimmer until it was the same gradation as the wall itself. We were actually photographing the card, but you couldn't tell the difference."

Later on in that same room, David wakes in the wee morning hours and discovers that his wife is gone. "I wanted to simulate that sort of blue early morning light, just before sunrise. We took the filter off the camera, underexposed and just used daylight. We opened the windows in that area, put silks in front of the windows, and let that light drift onto the bed. It was totally natural."

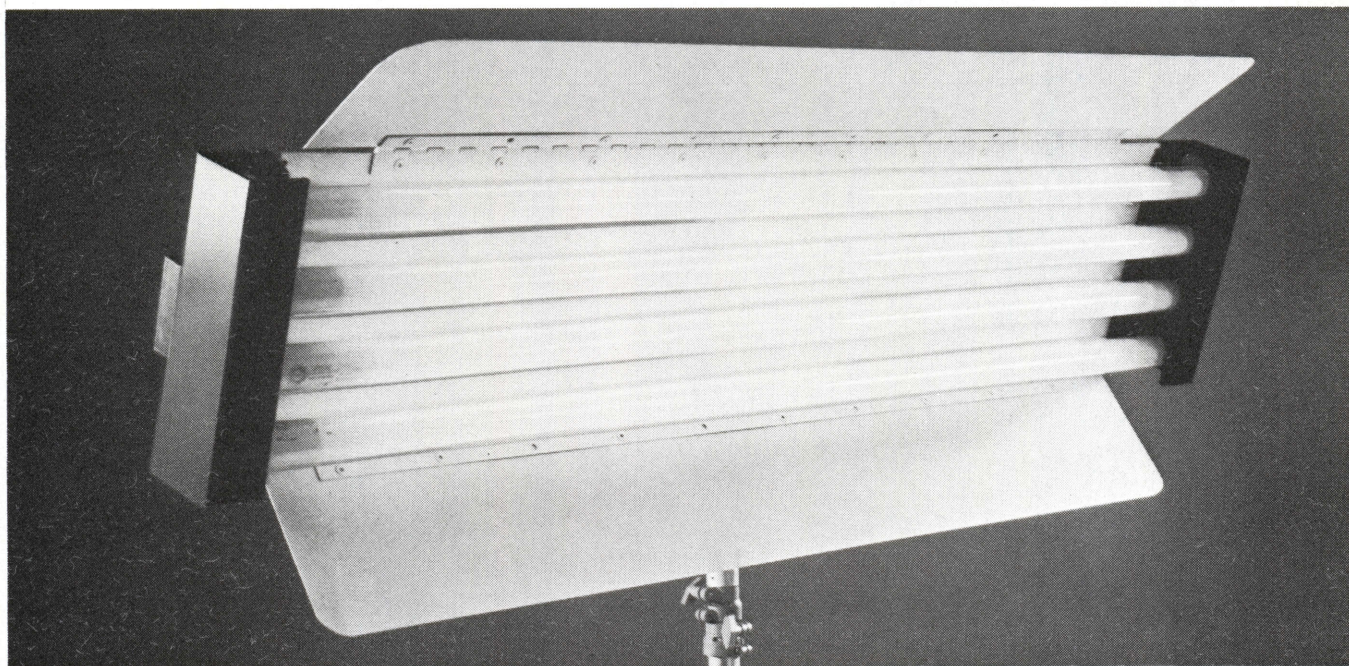
On some sequences, Saarinen "played" with color as well, using half CTO gel over tungstens for the night scenes in the motor court. "Tungsten light is redder than any kind of moonlight or most streetlights, and the gel helped warm things up. Using the tungsten simulated the reddish glow given off by the little 12-watt practicals that were strung around the motor court."

After viewing the finished version, Saarinen had mixed feelings about the job turned in by Technicolor. "For the most part, they did a great job. I was amazed at the quality of the dailies, and how close they were to what they should have been. I was real happy as well with the answer print. When they went to interpositive however, I was out of town, and when I came back, I noticed that the color bounced around more than it should have."

Saarinen does feel that he accomplished what he set out to do on *Lost in America*, which is turning out to be Albert Brooks' most accessible and successful film to date. "In terms of beautiful pictures," he says, "this is not a beautiful film, nor was it designed to be one. Beauty to Albert Brooks is what works and how well. His films are subtle, and demand a shooting style that is simple, but not simplistic. If the film is good, it should not be in spite of the photography, but if it's not a good film, the photography won't make the slightest difference. It was hard for me as a cameraman to restrain myself from shooting beautiful pictures, but after all, good comedy is not pretty."

■ *Michael Kunkes is a writer/filmmaker with a degree in filmmaking from the State University of New York at Binghamton. He is former associate editor of Millimeter magazine, and is president of Michael Kunkes, INK, a Los Angeles advertising and public relations agency.*

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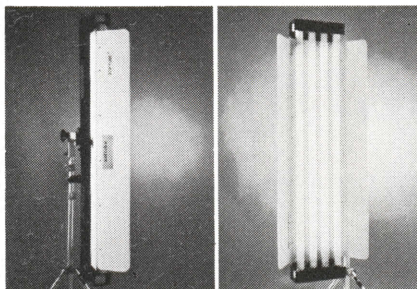
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A Silent Giant:

The Hunchback of Notre Dame

by George Turner

THE EARLY 1920S were years of great artistic and technical growth for motion pictures. So many outstanding films were made during that time that it is virtually impossible to pick a single favorite.

Certainly a leading contender is the 1923 *The Hunchback of Notre Dame*, produced at Universal City under the benign dictatorship of the president, Carl Laemmle, and his youthful production executive, Irving G. Thalberg. It has spectacle in the best sense of the word, fine performances, cinematography which set new standards in several respects, steady direction which kept all the sprawling elements of the picture under control, magnificent settings, and faithfulness to the spirit of a literary classic. It was one of the most expensive silent films, costing more than \$1,250,000.

Universal at the time specialized in the making of inexpensive program pictures which were sold in packages to exhibitors. These were graded by Laemmle as to importance and quality, the top line product being designated as Universal Jewels, then Junior Jewels, Specials, etc. There was an occasional Super Jewel, meaning a picture so far above the ordinary as to demand special handling, higher rentals and longer playdates. Of this mere handful (which includes *Foolish Wives*, *Merry-Go-Round*, *Phantom of the Opera* and *Uncle Tom's Cabin*), Laemmle's favorite and the company's biggest was *Hunchback*.

In adapting Victor Hugo's 1831 novel, "Notre Dame de Paris," Perley Poore Sheehan and Edward T. Lowe made many changes, some in the interest of paring the story down to a practical length for the screen, partly to relieve some of the gloom which permeates the novel but would hardly be acceptable to theater audiences of the time, and partly to eliminate Hugo's criticisms of the church.

The film centers around Quasimodo, the deformed bell-ringer of the Cathedral of Notre Dame in Paris, in 1482. He is ordered by Jehan, evil brother of the archdeacon, to kidnap Esmeralda, a beautiful Gypsy dancing girl and ward of the king of the underworld, Clopin. She is rescued by the dashing Captain Phoebus and Quasimodo is sentenced to be lashed in the public square. Esmeralda, taking pity, brings him water and stirs in him a hopeless love. Jehan jealously stabs Phoebus as he embraces Esmeralda. The girl is blamed and sentenced to be hanged in front of Notre Dame. Quasimodo climbs down from the cathedral tower and carries Esmeralda into the sanctuary of the church. Clopin leads his army of beggars, thieves and murderers from their quarter, known as the Court of Miracles, to storm Notre Dame. Quasimodo, thinking they are trying to return the girl to the gallows, hurls building blocks and beams down on them. He finally routs the attack by pouring molten lead onto the rabble. The King's guards disperse the mob as Clopin dies. Jehan now tries to attack Esmeralda in the tower. In rescuing her, Quasimodo is fatally stabbed before throwing Jehan from the tower. Esmeralda learns that Phoebus is alive and that she has been exonerated. As she leaves, Quasimodo tolls the church bells, then dies.

Laemmle and Thalberg agreed that only Lon Chaney could portray Quasimodo. Even while early research was being done by Sheehan in Paris and the physical aspects of the production were being planned, Thalberg was trying to sign the reclusive actor, who was being difficult because of a grudge against the studio. An agreement was reached late in 1922.

A number of important directors had been considered. Chaney was instrumental in bringing in Wallace Worsley, who had directed him in the Goldwyn production, *The Penalty*. A veteran actor and producer of the New York stage, he became a film director in 1917 and had directed for most of the major studios. *Hunchback* was both his finest work and his last large-scale directorial effort. After it was completed he devoted most of his efforts to the making of travel pictures. He died in 1944.

Worsley was aware of Chaney's directorial ability and allowed him to direct some of his own scenes. In staging the gigantic crowd scenes, in which as many as 2,500 extras appeared, Worsley utilized for the first time in motion picture production a public address system. This was the new Western Electric Public Address Apparatus, which made it possible for the director to give orders to actors and crew members in all parts of the vast set. An ex-army officer, George M. Stallings, and ten assistant directors, headed by Jimmy Dugan and Jack Sullivan, helped to control the mass of players. One of the assistant-assistants was a Laemmle relative from France, William Wyler.

Many modern critics have pondered Universal's choice of a comparatively little-known director for a picture which competed (successfully) with the outstanding historical epics of the silent screen. However, a study of the film reveals that *Hunchback* has all the virtues and few of the faults of pictures produced by the better known makers of this type of film: the crowds are handled with great skill, the individual performances are first rate (yet even Chaney is unable to reduce Hugo's concept to a star vehicle), the photographic technique is superior to any picture of its kind of the period, and there is a welcome absence of the dramatic excesses that marred Cecil B. DeMille's films or the exaggerated sentimentality that Griffith so often fell prey to. And if this be heresy . . .

Elmer E. Sheeley was in charge of set design, with Sidney Ullman as his first assistant. Archie Hall was the technical director in charge of set construction. Stephen Goosson – who designed Shangri La for *Lost Horizon* a dozen or so years later – worked with Ullman and several other artists in a special drafting room over the main stage. Their drawings, which combined the factual with the fanciful, were based upon old prints of the architecture of the period, including a collection of sketches made by Victor Hugo. These designs were translated into plans which were blueprinted and delivered to Hall.

Meantime, 60 workmen hauled in cobblestones from a river 20 miles away and laid them in cement beds – the streets of old Paris. Flagstones were molded in cement and laid in a long row in front of a

string stretched between two poles to indicate the front line of the cathedral site. To lay out the cathedral place it was necessary to cut off one flank of a mountain and fill in a large swale.

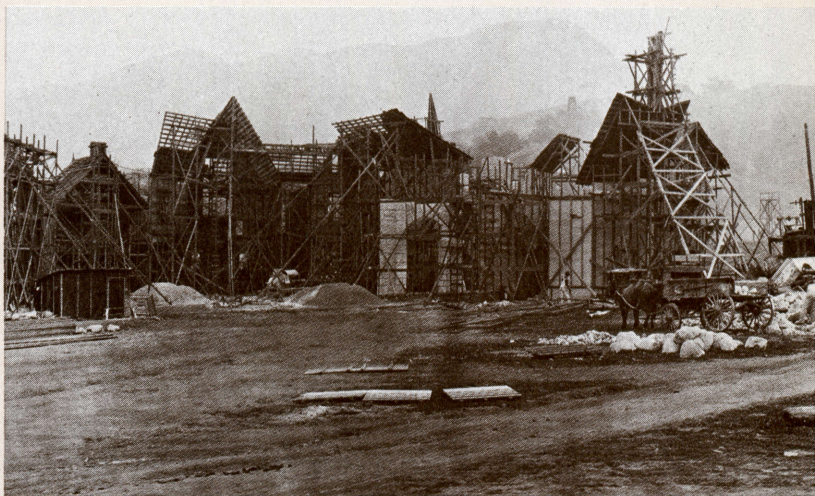
Carl Laemmle told Hall that the sets should be built as solidly as the real thing, just as had been done previously with the Monte Carlo and Vienna sets for Erich von Stroheim's extravaganzas, *Foolish Wives* and *Merry-Go-Round*. It was his theory that the sets could be used in many other productions, and he was right. They remained in use for four decades, until the cathedral and most of the other buildings were destroyed in a disastrous fire.

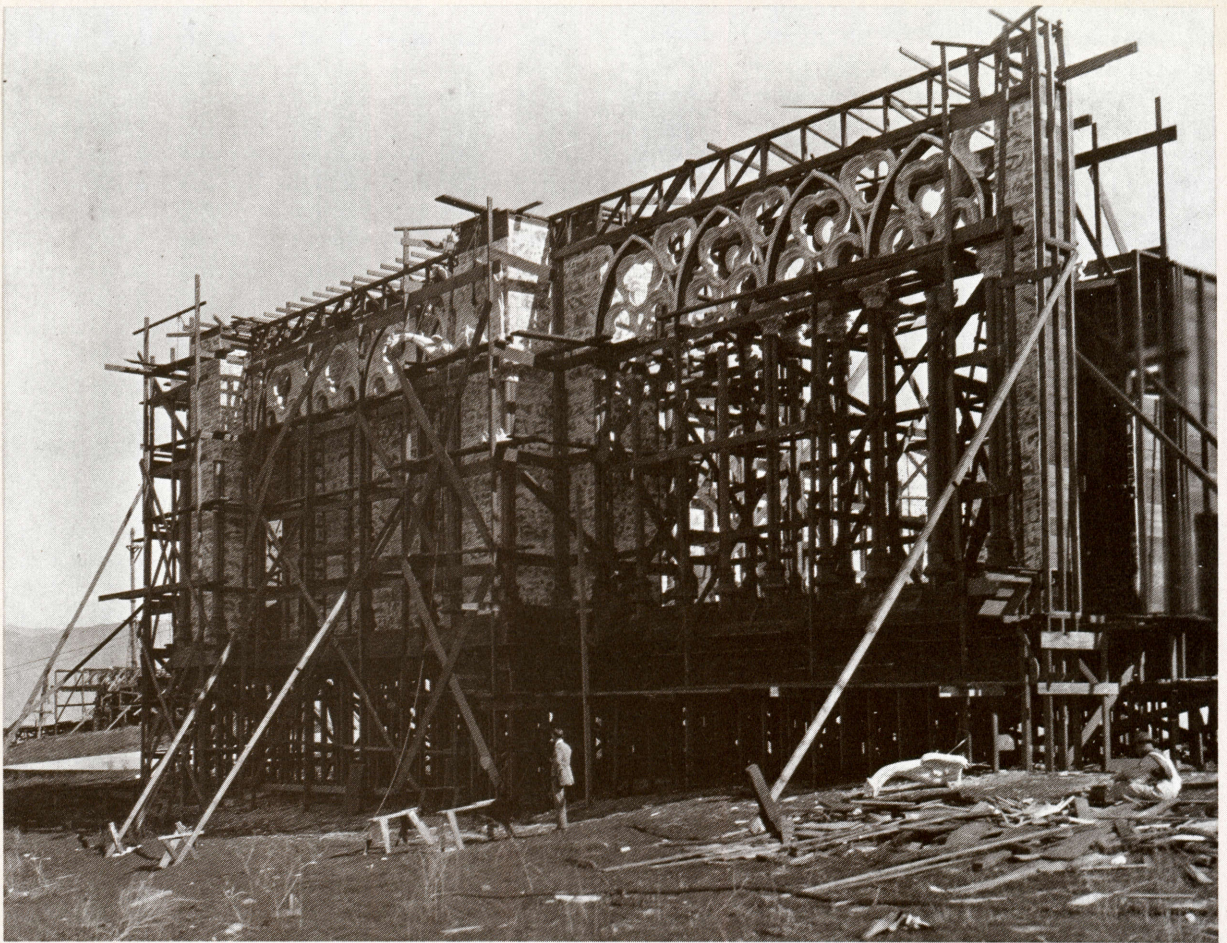
The framework was set up by 200 carpenters while sections of the facade were cast in concrete. Finn Froelich, a well known sculptor, was in charge of making the bas-reliefs, embellishments, saints, martyrs and gargoyles that cover the Gothic structure. Before completion the cathedral resembled a huge wooden shed, but when the lumber was removed it had become a replica of the original exterior – or, at least, the bottom 60 feet of it. After masons finished their work, 60 painters added the finishing touches.

At the time of the story, Notre Dame was 150 feet wide and 225 feet high (the spire was added at a later time). The cathedral ended at a point just above the huge arch over the center entrance. To show wider views of the cathedral, the upper portion was constructed as a large-scale miniature which was mounted between the camera and the building and lined up to blend perfectly with the full scale set. The complete cathedral, seen from several angles, defies detection.

Other parts of the building, for use in close-ups, were erected at different locations. Part of a tower was built full-scale on a hilltop about one mile away. The hill provided the elevation needed for low-angle shots but, as Patsy Ruth Miller says, "it was built so that you couldn't hurt yourself if you fell." The Bastille and drawbridge were built about a quarter of a mile from the courtyard. The gardens of the castle were located adjacent to the studio nursery, where the varieties of plants could be moved conveniently. Concrete arches

A part of medieval Paris being rebuilt at Universal City. At right are cobblestones, hauled by wagons from a river 20 miles away.





Construction of the cathedral begins. Note gargoyle on the ground at right.

were built over the Los Angeles River, which forms the northern boundary of Universal City, to represent the sewers of Paris. At that time the river bed was not concrete as it is today, and it was used in many pictures. When it appeared as the Seine, the Thames, the Danube or the Mississippi, the semi-arid river had to be dammed up or even irrigated by the studio fire department.

The principal sets covered 19 acres, 11 for the courtyard and cathedral and eight for streets and the Court of Miracles. The buildings included a castle, a hotel, shops, taverns and houses. Construction took six months. The settings and properties cost about \$500,000 - \$342,869 of which was for the Place du Parvis set.

In *Movie Weekly* for April 21, 1923, Grace Kingsley describes a visit with Chaney to the set, where they "sat in the 11-acre-square of Notre Dame, facing that wonderful cathedral.

"We had driven up in Lon's Cadillac! Imagine the humble hunchback driving a Cadillac! Around us sprawled or lounged a thousand extras . . . They were all in bright colors, and they formed a marvelous picture against the backgrounds of church, shops, old-fashioned houses of Paris, which themselves were silhouetted against the green hills of Universal City and the purple mountains in the distance."

Perley Poore Sheehan, co-author of the screenplay, described the atmosphere more poetically in *Cinema Art* of January, 1924:

"The cathedral towers would shimmer in a blue radiance like that of a thousand moons and send back echoes of coyote calls. Wouldn't Victor Hugo have loved all this? I believe so. It was his sort of stuff. It was great and weird. I myself like to believe - and I do believe it - that the great Frenchman's spirit presided over the filming . . . from the very inception of the idea right up to the premiere opening on Broadway." Sheehan had lived in Paris for 10 years "under the very shadow of the old cathedral" and just around the corner from Hugo's house.

Jack Rumsey, "recently returned from Hollywood," told the *New York Times* (July 1, 1923) that "the immensity of the sets and their accuracy was far beyond the ken of most persons" and that he "felt quite nonplussed when he stood before the great gate of Notre Dame in Universal City . . . All the atmosphere of Paris was near the cathedral, and every little detail has received attention in making the copy in far off California . . ."

Sheehan, in addition to his writing duties, worked as a technical supervisor for Worsley. It was he who set the tone for the costuming with this directive:

"We don't think of Christopher Columbus discovering America 'in costume.' We don't allow ourselves to think for a moment of *Notre Dame's* fifteenth century people as wearing grotesque costumes and having queer costumes. No costumes were grotesque to the people who wore them. They were natural, everyday clothes. Our characters must wear their costumes as such. The costumes . . . will be incidental and the main object is to make them and use them so that the spectator will forget them. They must be incidental - accurate, correct, but inconspicuous."

Three thousand costumes had to be specially made. Planning and measurements were completed about a month before shooting was to begin. A building on the lot, which was 125 feet long with 18 windows, was enlarged to about double that size to handle the large number of costumes to be handed out to the extras at the windows. Around 200 men were necessary to handle wardrobe duties. Col. Gordon McGee, of Western Costume Company, supervised costume research and production. The fancier clothes were worn by characters of the court, the 50 men and 50 women attending the grand ball at the mansion of Madame Gaundalaurier, Esmeralda, and certain of the Gypsies. The more conspicuous extras were put on the payroll two days early so they could become accustomed to wearing their costumes in order that they would behave on camera as though they were wearing the normal clothes of their day.

The most unusual garb is that the underworld denizens of the Court of Miracles. Because their home was surrounded by old palaces, these thieves and beggars wore garments pilfered from the nobility, especially during the plague when many of the rich abandoned their homes until the danger had passed. The beggars, therefore, wore the raiment of royalty, however soiled and tattered. The appearance of reality achieved in *Hunchback*, as opposed to the comic-opera look that contributed to the public's dislike of most historical epics, may be traced in large measure to the authentically drab costuming.

Lon Chaney had been a colorful part of the ambience at Universal since its early days, first as an extra and bit player and eventually a featured actor and sometime writer and director. He was one of several actors (others were Jack Pierce, Cecil Holland and C. E. Collins) who stayed busy by bringing their own makeup kits to casting calls and making themselves up on the spot to fit whatever kinds of characters were being cast. Since Universal specialized in Westerns, serials and jungle melodramas, Chaney played many a scar-faced heavy, also appearing as elderly men and paunchy fathers in society dramas.

Chaney, after a salary dispute, left Universal and found greater fame at Paramount, Goldwyn and other companies. When he returned to do *Hunchback* he was a major star, earning the then-munificent sum of \$2,500 per week. This picture brought him even greater stature, and when the Metro-Goldwyn company was formed in 1924, he was their first star. He returned to Universal for the last time that year to make

The Phantom of the Opera, thereafter working for MGM exclusively. He died in 1930 after making his only talking picture, *The Unholy Three*. Ironically, his two most popular pictures were Universal's *Hunchback* and *Phantom*.

Checking in at Universal, Chaney appropriated Dressing Room No. 5, a new one-room shack, with shower, on the frontlot. Locking himself in with his makeup kit, two chairs, an iron cot, a wardrobe, a small table and a makeup mirror, he worked out the details of Quasimodo. His personal manager, A.A. Grasso, had borrowed for him an old edition of Hugo's book which contained eight drawings of the hunchback by Hugo himself. Using these and Hugo's vivid verbal descriptions, Chaney emerged at length with a Quasimodo which seemed akin to the monstrous gargoyles of *Notre Dame*.

This initiated a studio tradition regarding No. 5 which persisted until it and similar cubicles made way for more modern structures. Chaney returned there to create *The Phantom of the Opera* in secrecy. In 1928 the room was commandeered by Jack P. Pierce, head of makeup and a great friend and admirer of Chaney. Pierce created there Conrad Veidt's horror makeup for *The Man Who Laughs*. Later he worked in secrecy in No. 5 on Boris Karloff, Bela Lugosi, Lon Chaney Jr. and others who portrayed monsters of vari-



Ernest Torrence exhorts the rabble in a superb night for night scene. Below: studio artisans sculpt plaster saints.





Quasimodo on the pillory in Laemmle's *Paris*. Below, Patsy Ruth Miller as Esmeralda is abducted by the Hunchback.



ous sorts in the studio's popular horror movies of the 1930s and '40s. No. 5 was known as the *Bugaboudoir* and engendered a certain superstitious awe among some of the old-time Universalites.

"When Chaney first put on his makeup – *The Hunchback* is his life's dream and every bit of his 15 years' intensive study of makeup goes into it – Jack Freulich, studio photographer; Henry Freulich, Graflex cameraman with the publicity department; Fred L. Archer, head of the art title department and internationally known for his prize-winning studies, and two other photographers shot photographs simultaneously of the remarkable Quasimodo," *American Cinematographer* reported in February, 1923. This was the first photographic job for the youthful Henry Freulich (later ASC), son of Jack and a celebrated director of photography in later years.

The other major roles were assigned to Patsy Ruth Miller, an excellent young actress who already had played leads in more than a dozen pictures, as Esmeralda; Norman Kerry (died 1956), who had been in pictures since 1919 and had just scored a big success in another spectacular production *Merry-Go-Round*, as Phoebus; and Ernest Torrence (died 1933), a tall, lantern-jawed Scottish opera singer, as the beggar-king,

Clopin. All three are strong assets to the picture, and Torrence's characterization is almost as impelling as Chaney's. In fact, several who saw the original premiere engagement version have stated that Torrence's role was severely cut when the film was edited for release, and that he dominated much of the long edition, which no longer is available.

Robert E. Newhard, ASC, was named first cameraman (today he would be called director of photography). However, the magnitude of production was such over a long period that almost every other cameraman at Universal had a hand in it at various times, including Charles Stumar, ASC, Stephen S. Norton, ASC, Anthony Kornmann, ASC, Virgil Miller, ASC, Friend F. Baker, ASC, Philip H. Whitman, ASC, and perhaps a dozen others. Only Newhard received screen credit.

A founding member of the ASC in 1918–19, Newhard had been a cinematographer for about 13 years, having begun as an assistant to Fred Balshofer at the 101 Bison Ranch. He then became one of the earliest special effects specialists, heading an experimental and research department for Thomas H. Ince. One of his most striking efforts was a Billie Burke feature filmed entirely without artificial light by use of mirrors and reflectors. After shooting 14 features for Ince in four years, he worked for Paralta, Frank Keenan, Selznick, Fox, and Goldwyn. He teamed with aviator Frank Clarke in making aerial films, then was called to Universal for his biggest assignment: six months' work on *Hunchback*. It proved his *magnum opus*, a film whose photographic qualities (even in the much-copied 16mm prints which seem to be all that remain) are remarkable even today.

Newhard hailed from rural Pennsylvania and, since boyhood, had been fond of keeping snakes as pets. Snakes were abundant in the grassy and (then) largely undeveloped Universal backlot, and a six-foot gopher snake became Newhard's companion during the last two weeks of shooting. Most of the cast and crew gave the cameraman's friend a wide berth.

Anthony Kornmann ASC, also worked as a first cameraman on many scenes, although it is now impossible to determine which ones. Kornmann was a second unit specialist during most of his career. Hungarian-born Charles Stumar, the most famous of the cinematographers who contributed to the film, was another veteran of the Inceville studio and is believed to have shot some of the softly romantic scenes between Esmeralda and Phoebus. At the height of his career, in 1935, Stumar was killed in an airplane crash while scouting locations. Stephen S. Norton, ASC, a diminutive cameraman who at the time had photographed more than 160 features, several serials and innumerable short films, lent his expertise to some of the mob action scenes.

Phil Whitman, another ASC founder, and Friend Baker had been working with designer Sheeley in developing special effects techniques for Universal. They were responsible for the flawless glass shots and hanging miniature effects which ex-

panded the scope of the settings enormously, completing the job of transforming the backlot into old Paris. They also filmed, at considerable expense, a fantasy sequence depicting Phoebus' fevered dreams during his delirium, which was not used in the final cut because studio executives found it confusing. (Whitman, who eventually switched to directing, is best known for his special effects for Douglas Fairbanks' *The Thief of Bagdad* of 1926, and it was Baker who staged the earthquake for the 1927 *Old San Francisco*).

Virgil Miller, ASC, who died in 1974, considered Chaney "really one of the greatest." Miller said, "I remember when we were both working at Universal and I was getting \$18 a week and he was getting \$35. One day he said, 'Virg, I'm going to hit 'em for a raise.' That encouraged me and I told him I would ask for a raise of \$2 a week for myself. We went to Mr. Laemmle and he was refused his raise and so he left Universal. I got my increase and stayed."

"A few years later, with Chaney an established star, the studio wanted him and no one else for *The Hunchback*. He wanted me on camera, so I sat in on the conferences. I was delighted to hear my old friend hold out firmly for an added \$35 to be called for in his contract. He got it, too. His checks were made out for \$2,535 every week - quite a raise!"

Chaney demanded that Miller

should do all of his close-ups. Miller had photographed Chaney in *The Trap* (1922), one of the earliest pictures to use panchromatic film, and Chaney liked the closeups better than those in his other films. Miller was also involved in some special effects and some of the large scale action.

"Once, when Chaney was at the top of the cathedral set and I was down below at the camera, I noticed that he was still wearing his wrist watch," Miller recalled. "I signaled wildly and spelled out 'wrist' in sign language, which he understood because his parents were deaf, and he stuffed the watch out of sight. After that I always checked him out with the six-inch lens so I got a good close look before we started. I hated to see him have to do the rough scenes over if he didn't have to."

Chaney was himself an enigma. Secretive, uncommunicative and unfriendly much of the time, he could be a staunch friend as well. His first wife considered him an implacable and unforgiving enemy and his son suggested he could be terribly cruel.

"I remember his kindness," Patsy Ruth Miller said recently of her work in *Hunchback*. "I was only 17, and he was extremely kind and very helpful to me, which is certainly not true of all the big stars of that time. He was very serious when working, but had a fey sense of humor. We were working at night on the



Wallace Worsley, left, uses the first movie set public address system. Bell & Howell cameras are manned by Robert Newhard, ASC, shooting the domestic negative, and Harry McGuire, making the foreign negative.



Virgil Miller, ASC.

underworld set and it was about 1 a.m. when they got to my scene. It was dark, foggy, and the klieg lights gave it an eerie look. I had just started when, all of a sudden, a monstrous creature came leaping out from between two buildings and scared the daylights out of me! When I was through screaming I realized it was Lon.

"During preparations for one of the big emotional scenes he said to me, very quietly: 'Remember, my dear, you are an actress. You don't have to live the part, just act it. The point is not for you to cry; make your audience cry. You have to be in control of yourself.' When Norman Kerry and I were doing the scene where he is trying to seduce the Gypsy girl and he's offering me wine and I'm looking calf-eyed, Lon came in off stage and said, 'Oh Mr. Kerry, are my eyes too big for pictures?'"

"Lon did a lot of directing on his films. He wasn't a very social man. I never saw him out socially, anywhere."

Jackie Coogan, who worked with Chaney in *Oliver Twist* in 1922, described him as "very short, very tan, bowlegged – a rough man, a tough man. A real loner – he made Howard Hughes look like Pia Zadora."

Grace Kingsley found Chaney without makeup "very good-looking, very charming, very well-dressed. You'd never recognize him if you met him on the street.

"In one way," he explained, as we watched the extras flock over to the set, "makeup helps you in putting a characterization over. It aids you in getting into the spirit of the part while you are looking into the mirror, and when you see the interest in the faces of your co-workers. But in another way it hinders.

"When a makeup is as painful as that which I wore as Blizzard in *The Penalty*, when I had my legs strapped up and couldn't bear it more than 20 minutes at a time – when I have to be a cripple, as in *The Miracle Man*, or have to keep a certain attitude of body as I did in playing Yen Sen in *Shadows*, it sometimes

takes a good deal of imagination to forget your physical sufferings. Yet at that the subconscious mind has a marvelous way of making you keep the right attitudes and make the right gestures when you are actually acting.

"But there's another thing. Though makeup helps the illusion in the minds of the audience, too, still it sometimes requires ten times the concentration to get results when a grotesque makeup is used, inasmuch as the face, in its set lines, must necessarily fail to register many expressions.

"And when it comes to a character like the Hunchback, which demands that the audience sympathize, despite his repugnant looks – well, it is the hardest part I ever played, that's all.

"You see, I am following as closely as possible the best-known illustrations of Hugo's novel. Therefore, I am hunchbacked, knock-kneed, have one eye almost entirely closed by a big wart, have a hairy skin, and am altogether repulsive to look at. But this isn't all. I wear a cast that weighs about 50 pounds, and which, doubled up as I am, it is nothing short of agony to carry around."

"Can't you take off your makeup and rest once in a while?" I asked.

"What? When it takes me three hours and a half exactly to put it on?" demanded Lon. "I should say not! But at that, I cannot stand the makeup longer than six hours at a time. Yet I must not only get interest in the Hunchback; I must get the deepest sympathy for him from my audiences, else he fills my onlookers only with revulsion and disgust. But the thing I dread most of all is not the putting on of the makeup, not even the wearing of it, but the taking it off. See all the hair gone from my eyebrows? Pulled it out taking off my false eyebrows. And my eyelid is all burned from the application of strong glue. Also I'm sure I'm permanently warped about the shoulders from carrying that hump on my back."

Actually, there is one major difference in Chaney's Quasimodo and that of Hugo. The author described a giant of a man who had been put together badly. Chaney, being of no more than average size, opted for a misshapen dwarf, a concept the public accepted without complaint. His performance is above criticism, a masterpiece of pantomime investing an initially terrifying creature with endearing qualities. It should be noted that despite his many deformities, the hunchback possesses great strength and agility. Instead of "hamming it up," as actors in heavy makeup often do, Chaney gives the impression that Quasimodo has learned to live with his condition.

Chaney was (secretly) doubled by Universal's serial star, Joe Bonomo, in some of the more athletic scenes on the tower and in the climb down the facade to rescue Esmeralda.

Historically, the most remarkable aspects of the picture are the lighting and photography of the night scenes, which are far more sophisticated than any previous efforts of this kind. As Harry D. Brown, who headed the lighting crew, said in *American Cinematographer* (October, 1923), "the exact reproduction

of the cathedral of Notre Dame on American soil at Universal City . . . was in itself a triumph for the motion picture technician, but in spite of all the faithfulness with which the reproduction was executed it could not have been brought to the screen if it were not amply illuminated so that it could be photographed properly.

"There was no precedent by which the electrical engineer or the chief cinematographer could be guided. The entire illumination and proper photography were matters that they themselves had to figure out, and succeed or fail according to their own judgment." Brown stated that "success in filming this record-size set depended basically on the human angle; that is, all the artistic and technical attainments would have been naught had the cinematographic and electrical divisions not worked in harmony so that efficiency in the two departments aided rather than hindered.

"Bob Newhard, a member of the American Society of Cinematographers, . . . is an artist of highest quality as proved by his splendid photographic achievement in *The Hunchback*. More than that, he is a prince among men, and during the six months that we worked on the picture there never was a controversy of any kind between the cinematographer and the electrical department, although at times the natural difficulties involved in the making of the picture were such as would test the evenest of tempers. As photography is one of the outstanding features in this production, Newhard cannot be given too much credit for his work.

"In the first sequence, that of the 'Festival of Fools,' the illumination had to be of such an intensity that would permit us to shoot the same shots with considerably less light and a great deal more in later scenes. Baskets of burning substances being the source of light, scenes were staged in the dead of night with the buildings all dark and no sign of life, when we had mobs to rush in suddenly from all sides with burning torches, starting bonfires and setting buildings on fire. To light this action atmospherically correct required not only a different intensity of light, but made it necessary to gradually raise the illumination as the mobs advanced on the palace and the cathedral."

Used in filming the festival were 37 sunlight arcs, five GE spots, 154 Winfields and 47 overheads, plus 62 practical arcs for the baskets. Much more complicated was the lighting for the "moonlight and torches" scenes, described by Brown as follows:

"... We started with 15 sunlight arcs and 10 120-ampere spots, the 15 sunlight arcs burning full capacity with 37 sunlight arcs burning at very low voltage. As the mobs advanced with their torches, the voltage was raised to a certain intensity, gradually increasing when they started the bonfires, again raising a little more when the buildings were set on fire, while in the meantime the windows in all of the buildings were lighting up. By the time the scene had progressed to its height all sunlight arcs were burning at their full capacity, every window was lighted and the entire set was one blaze of light for fully 10 minutes. The total amount of equipment burning was 52 sunlight arcs, 21 GE high

intensity spots, 30 120-ampere spots, 47 overheads and 249 Winfields.

"To supply energy to this equipment required seven motor generator sets, two of which were of 300-kilowatt capacity, and three gas-driven power wagons, which gave a total of 24,000 amperes actual load. This energy was distributed to the various parts of the set over approximately five miles of stage cable and feeders, terminating in 16 location switchboards, and from there to the different pieces of apparatus. Energy was transmitted from the main sub-station at the front end of the plant through one mile of 2200-volt feeders."

Earl Miller was chief gaffer in charge of the electrical crew, consisting of 139 men working under nine divisional foremen. Separate crews handled lights and feeders to save time when changing setups. Miller noted that "All during the period of production we had 17 other companies shooting on the lot. We had to furnish them with men and equipment, too, bringing the total to 230 electricians on the payroll and practically all the available equipment in Los Angeles."

Harry Brown was one of the finest electrical experts in the studios. A Spanish-American War veteran, he built the first large electrical signs in America at Atlantic City in 1901, and later pioneered in designing animated signs in Los Angeles. He built the first portable generator and developed the first radioactive machine for the treatment of cancer.

The chief gaffer was Earl Miller, who reminisced about the picture 17 years later, when as chief electrical engineer of RKO-Radio Pictures he worked on a new version of *Hunchback* (in *American Cinematographer* for February, 1940):

"What a winter that was; rain, fog, wind and mud - days, weeks, months of it. 'The largest artificially lighted motion picture set in the world,' they told us.

"Believe me, when I recall those foggy cold nights and the miles we walked, night after night, up and down that cobblestone street and out in the mud, I wonder how the picture was ever completed.

"In 1923, incandescent lights were not used for motion pictures. The street set was a few

A night scene in the Court of Miracles.





Phil Whitman, ASC.

feet longer and wider than the one used in the 1939 version. There were only 56 24-inch sun arcs in the entire industry in Hollywood.

"We needed every one for our night shots and Universal arranged to rent all but one. Every night for seven long weeks all the sets in other studios were stripped of 24-inch sun arcs. They were loaded on trucks and hauled to Universal. We used them until 5 a.m., but had to return them to the proper studio and have them set up and ready to burn by 8 a.m. Whenever possible we left the lights on the trucks all night instead of building parallels . . .

"Every light . . . was an arc. Some of the 24-inch had automatic feed, but in addition to these there were more than 450 other arcs, all of which were hand fed. All lights had to be trimmed at least twice every night and some three times. Yes, we actually shot every night, all night, for 49 straight nights. At one time (and it *would* be the time it rained the hardest) my crew and I worked five days and six nights straight, rigged all day and shot all night; never took our shoes off; catnapped between shots.

"Finally . . . the last reel was in the can, and in spite of all the work and worry everyone who worked on or in that picture will tell you that we had lots of fun making it."

C. Roy Hunter, head of the camera and laboratory departments, said that approximately 750,000 feet of Eastman negative were exposed. The approximate ASA daylight rating of that emulsion would have been 12. The lenses used were no faster than f:3.5; many were f:4.5 lenses.

Hunter said that "there was one day when the cameras totaled 26. They were grouped in pairs." (It was customary at that time to photograph everything with paired cameras, one of which shot the negative to be sent overseas for the preparation of foreign prints. This affected an enormous saving in shipping and customs costs as compared to sending release prints. Cinematographers were designated as first and second

cameramen for this reason.) "The occasion was the engagement of 2500 extras. Unknown to these extras they were to be attacked by 500 horsemen in tin armor and driven onto the steps of the cathedral. The plan was to create a panic. The plan succeeded – in full.

"Every precaution was taken to avoid accidents. First aid stations were established at convenient points, while surgeons and nurses were allotted. The 500 horsemen precipitated a most realistic mob scene when the word was given for them to move in. Terror and pandemonium reigned, speaking truthfully. But the precautions that had been taken worked to a charm. Almost. Of all the close calls and narrow escapes from injury only one required the attention of the surgeons and nurses. And that was a horseman who inadvertently fell from his mount and thereby broke a leg." (*American Cinematographer*, February 1940).

Before the scene with the 2500 extras, 500 horsemen and 26 cameras was shot, Worsley announced that he would demand a retake of the entire day's work should any one of the cameramen fail to get the expected result. This so unnerved one cameraman that, after shooting the slate with his 3" lens, he failed to remove the cap from the 2" lens with which he was supposed to shoot the action. Hunter, upon seeing the rushes, quickly had an extra print struck of the film shot by the camera nearest that of the unlucky cameraman and attached it to the latter's slate shot. When Worsley viewed the rushes, carefully noting the name of the cameraman on each slate, he was forced to admit that every man had performed admirably. Hunter estimated that the scene would have cost about \$30,000 to re-stage – enough money to finance a couple of the profitable six-day Westerns that were Universal's main source of bread-and-butter in those days.

Principal photography, which had begun on December 16, 1922, was completed on June 3, 1923. About 750,000 feet of negative was exposed. Editors Maurice Pivar, Sid Singerman and Ed Curtiss cut from this an unusually long picture – 12 reels – which would be released to key theaters only at a stage-play ticket price.

Fred Archer prepared the art titles, which were largely hand-lettered and illustrated in opaque tempera.

The completed negative was shipped via armored car to the Universal vaults, at 1600 Broadway in New York, around August 1. Accompanied by one of Laemmle's executives, James V. Bryson, and an armed guard, it was insured for \$1.5 million, which approximated the actual cost.

One print was struck for the use of Dr. Hugo Riesenfeld, Viennese-born violinist-composer-conductor-empresario, at that time the most famous of the movie theater musical directors. Riesenfeld prepared what he called a "musical setting" – a compilation of classical themes, music composed for adaptation by theater orchestras, and original compositions, which were arranged into a closely keyed accompaniment for the film. The music was scored for a symphonic orchestra and also arranged for small ensemble and keyboard solo.

The published score was made available to theaters which booked the film.

Release prints were printed on Eastman tinted base stocks. This type of color was not intended to resemble what was called *natural color* processes, such as Technicolor or Kinemacolor, but was designed to intensify the changing moods of the drama. The transparent colors of the film base provided a tint under the black and white images – amber for the candlelight interiors, blue for night effects, peachglow for the romantic scenes, a garish green for the torture chamber and the evil plottings of Jehan, and magenta for the flashback sequence about the kidnapping of Crazy Godule's child. In some instances the images were toned as well, producing a blue on blue for some of the night scenes, sepia on ambertone, and, for the torture scenes, a blue tone over a green tint that is appropriately hideous.

The premiere was held at Carnegie Hall on August 30, 1923. Proceeds were donated to the American Legion's fund drive for a mountain camp for veterans. Regular showings at advanced prices began at the Astor Theater on September 2. The picture received excellent reviews and drew huge crowds. Laemmle was so pleased that he commissioned an Austrian sculptor, A. Finta, to make a bust of Chaney as Quasimodo, which was installed in the lobby in anticipation of a long engagement. A special program was held at the Astor to celebrate the 100th performance on October 22, and another for the 200th showing during an entire week of late December. The picture was about 12,000 feet long during this special engagement, with a running time of 320 minutes. It was later cut to about 10,000 feet.

On February 17, 1924, *Hunchback* left the Astor to begin its first regular price release. Carl Edouarde, musical director of the Mark Strand Theater in New York, assisted by composer-orchestrator Cecil Copping, arranged an entirely new score for a 50-piece orchestra, mixed chorus, soloists and chimes. Domenico Savino composed the "love theme," "Twilight Hour," and classics by Arcadelt, Suk, Delsaux, Fourdrain and others were utilized.

In 1929, plans were formulated to remake *Hunchback* as a talkie, utilizing the same sets and props that had been created for the original. Chaney, now under contract to MGM, was not available to re-create his role, and the other actor considered for the part, Conrad Veidt, returned to his native Germany after hearing his heavily accented performance in the part-talking versions of two other films. The Depression had placed Universal in financial straits which made production of a picture of such scope impractical, so Laemmle had to content himself with a reissue of the original with a new musical score synchronized on disks. Recorded under the supervision of Roy Hunter, the orchestra was conducted by Heinz Roemheld with original music by Roemheld and Sam A. Perry augmented with library music.

Remake plans resurfaced in 1931 with Bela Lugosi as the prospective Quasimodo. A new script was written and during the next four years Boris

Karloff, Henry Hull, Peter Lorre and Edward G. Robinson were mentioned as possible Quasimodos. The project was still pending at the time Universal was bought by a group of financiers in March, 1936. With the departure of the Laemmle family and friends, the new owners set about establishing a new image in which Gothic spectacle had no place.

Three years later, *Hunchback* was remade, superbly, by RKO-Radio, with Charles Laughton. RKO built a new cathedral and environs at the RKO Ranch in Encino. A French version, released in the U.S. in 1957, featured Anthony Quinn and Gina Lollobrigida.

Universal's Paris sets saw a great deal of use until the cathedral and most of the other buildings were destroyed in a fire in the 1960s.

After more than six decades, the 1923 film has attained almost legendary status. Laemmle's long-time right-hand man, Robert Cochrane, said an interesting thing about it a long time ago:

"The great pictures . . . were, almost without exception, productions which never would have been made if the question of whether or not they should be attempted had been left to a popular vote. You could count in a minute all the people who predicted the great success of *The Hunchback of Notre Dame*." ■

Credits

Carl Laemmle presents *The Hunchback of Notre Dame*; directed by Wallace Worsley; based on the book by Victor Hugo; adapted by Perley Poore Sheehan; scenario by Edward T. Lowe; photographed by Robert Newhard, ASC; film editors, Sidney Singerman, Maurice Pivar and Edward Curtiss; art directors, Elmer E. Sheeley and Sidney Ullman; added photography by Tony Kornmann, ASC, Virgil Miller, ASC, Charles Stumar, ASC, Stephen S. Norton, ASC; photographic effects by Philip H. Whitman, ASC, and Friend F. Baker, ASC; supervised by Irving S. Thalberg; production manager, George M. Stallings; sculptures by Finn Froelich and Charles Gemora; costume supervision, Col. Gordon McGee; assistant art directors, Stephen Goosson, Charles D. Hall; technical director, Archie Hall; continuity, Charlotte Woods; production assistants, Edgar Stein, Capt. Albert Conti; unit manager, William J. Koenig; electrical engineer, Arthur Shadur; lighting effects, Harry D. Brown, Earl Miller; lighting crew, Carl Gotham, Bud Garner, G.H. Merhoff, Soldier Graham, Fred Seelock, Eddie Barry, Bert Kohler, Eric von Miessel, Wayne West; assistant directors, Jack Sullivan, James Dugan, William Wyler; art titles, Fred W. Archer, ASC; stillmen, Jack Freulich, ASC, Henry Freulich, ASC; casting, Fred Datig; music (1923) arranged by Hugo Riesenfeld; music (1924) arranged by Carl Edouarde and Cecil Copping, featuring "Twilight Hour" by Domenico Savino; music (1928) arranged and composed by Heinz Roemheld and Sam A. Perry; length c. 12,000 feet; released September 6, 1923.

Cast

Quasimodo, Lon Chaney; *Esmeralda*, Patsy Ruth Miller; *Phoebe*, Norman Kerry; *Clopin*, Ernest Torrence; *Mme. de Gondelaurier*, Kate Lester; *Jehan*, Brandon Hurst; *Gringoire*, Raymond Hatton; *King Louis XI*, Tully Marshall; *Dom Claude*, Nigel de Brulier; *King's Chamberlain*, Edwin Wallock; *Justice of the Court*, John Cossar; *M. Neufchatel*, Harry L. Van Meter; *Crazy Godule*, Gladys Brockwell; *Marie*, Eulalie Jensen; *Fleur de Lys*, Winifred Bryson; *M. le Torteau*, Nicolai de Ruiz; *Josephus*, William Parke Sr.; *Charmolu's Assistant*, W. Ray Myers; *Charmolu*, Roy Laidlaw; *Hook-hand*, Robert Kortman; *Fat Man*, Harry Holman; *Double for Chaney*, Joe Bonomo; and Ethan Laidlaw, Al Ferguson, John George, George MacQuarrie, Albert MacQuarrie, Jay Hunt, Harrison DeVere, Pearl Tupper, Eva Lewis, Jane Sherman, Helen Brunneau, Gladys Johnston, Lydia Yeaman Titus, Alex Manuel, Arthur Hurni, Rene Traveletti.

Capturing the Heat of *Summerspell*

by J. Greg Evans

Patterns of venetian blinds and electric fan create shadows from late afternoon sunlight in this scene with Kay Freeman and Ed Wright.



The warm gold of the sun pushes its way over the rounded blackness of the hills that surround the Wisdom farm. Over the soft yellow of the fields the light creeps, past the abandoned horse track where the white of the fence is blistered from neglect and across the shingled roof of the large empty barn finally spilling onto the house with its darkened windows. Darkened, despite the sunlight that breaks through the wooden framed glass and onto the sleeping faces of the Wisdoms who live there; faces that only turn away from the light, we discover.

It is early morning this July day in 1946, but already it is hot. Before noon the dust that covers the ground, that is kicked up by walking feet and shuffled high into the air will stick to damp skin and choke dry throats. Clothes will cling annoyingly and fingers will pluck repeatedly at the salt-smelling fabric fanning it in the hopes that it will cool and dry.

Amidst this inescapable hot spell of summer the Wisdom

family is getting together to share in their annual July 4th celebration, a ritual that no one enjoys but no one can escape from, just as no one can escape the sweltering summerspell of heat that even the dark recesses of the house cannot relieve. To share in some quiet moments together that only mock a past they would all soon forget but that continues to hang over them more heavily than the heat of the approaching day. The heat finally explodes in unspoken truths revealing the monstrous pains and guilts that have been slowly eating away at the family. Truths, once unearthed will quickly be buried again, and when the day is over nothing will have changed; for the heat of a summer day stays long into the night.

In *Summerspell*, first-time director, Lina Shanklin, along with cinematographer Robert Elswit, have succeeded in capturing on film that which was best left to the written word – the hot sweltering textures of summers gone by. To achieve this stylistic look for the

film, Shanklin and Elswit tested dozens of colored filters, fog filters, and diffusion filters using every possible combination under every conceivable lighting situation to ultimately come up with the sophisticated series of filters used to shoot the film.

For exteriors Elswit used a #1 or #2 Harrison coral filter. The density of the filter used depended upon the exterior color temperature. A #1 or #2 double fog filter was combined with the coral filter. Density of the double fog was dependent upon the focal length of the lenses being used, a shorter lens needing less diffusion than a longer lens. "The longer the lens," points out Elswit, "the more diffusion you usually need to create the same effect."

"It seemed like what the script was all about," recalls Elswit about his choice of filters. "It was a remembrance or a reflection, and it was what we hit upon in a way of stylizing the film. The coral filters were picked specifically for

their subtlety of color. Somehow when you shoot through these filters, especially the lighter ones, it just looks different than if you went for that color temperature on a printer. I don't think you can print that look in, it usually gets a little too red. If you get a neutral print and you've shot with corals, it's sometimes quite astonishing."

When shooting interiors, Elswit used a one half or one coral filter combined with a one half or one regular fog filter. Regular fog filters were used indoors because "the double fogs don't really do much to light sources or windows," says Elswit, "and I wanted the windows to burn up a little bit, bloom slightly. The regular fogs tend to do that." Outdoors, however, Elswit admits that the regular fogs look a little artificial. At night, particularly if it was really dark, Elswit would eliminate the fog filters altogether.

Another element that was constantly implemented to enhance the film's beauty was the sunrise and sunset of each day. Because these two times of the day are, as far as lighting is concerned, high in contrast, Elswit would usually find what he wanted to represent the darkest value and put that 2½ to 3 stops under middle grey. He would then let everything else fall where it would. Even though some of these shots do have very bright highlights, Elswit admits that mostly "they're just way in the background."

In direct contrast to these brightly lit backgrounds is a Fourth of July celebration loud with explosions and bright with fireworks. Here the entire sequence was lit from the flashes produced by the sparklers and assorted fireworks. Despite the fact that this sequence, like many others, was filmed at dusk, the brightness of the fireworks makes the background look black.

The shooting of the interiors for *Summerspell* often became a very complex process simply because the availability of light, artificial or otherwise, was sometimes limited. "The house

looks a certain way," says Elswit, "because there is light coming in through the windows." These limitations often forced him to balance whatever was in the foreground, such as faces or people, to things that he could not control, such as background walls, lights, and windows. By balancing the controllable but darker objects with the uncontrollable brighter areas, Elswit was able to maintain a completely natural look. Their biggest disadvantage was dependency on the continually shifting light that was coming in through the windows.

"I'm not trying to pretend that I lit that whole house," admits Elswit, "because there was no way, and when the sun went down we oftentimes couldn't shoot anymore unless we were doing very close-up kinds of things that I could control."

One shot in particular, which shows one of the film's main characters, a 14-year old girl, standing at the top of a staircase at night, is a perfect example of the kind of lighting faced by Elswit during the shooting. In the shot, the wall behind the girl is white and easily 2 to 2½ stops brighter than the girl, and although the shot is underexposed, details in

the girl's face are beautifully molded; not by the normal levels of light on her facial contours, but by varying degrees of darkness. It is the contrast of this and other similar shots that makes Elswit's approach to lighting this film unique.

Besides using 85 gels on the windows to tungsten balance the much needed sunlight, tracing paper was also placed over the windows. This was done to enhance the hot summer look (on occasion, 9-lights were placed outside and shown through the windows), and also to prevent anyone from seeing that outside the house was not miles of empty farmland but another house since all of the interiors were shot in a Los Angeles suburb.

The lighting equipment available to Elswit during the shot included two Mighty Mole kits, two 750-soft lights, and the 9-lights. Elswit also used some practical 211 bulbs (75 watts) and 212 bulbs (150 watts) on dimmer switches. The 211's and 212's burn at a constant 3200K but because of their low wattage, additional lights are usually required to fulfill a cinematographer's needs. Also, dimming these practicals below 80 percent of their brightness does

Magic hour scene shows Frank Whiteman watching as the family drives away from the farm.





Beverly Baker

Above: From camera position in doorway, Elswit shoots into the room, using a combination of overhead soft light, leaving the windows "hot" with a soft blooming effect. **Right:** Elswit with director Lina Shanklin and first AD Alan Blomquist.



Elizabeth Gower

tend to begin altering the consistency of the temperature. The limited amount of lighting equipment was not, however, a major hindrance for creating the moods Elswit wanted. As he points out, "I tried to make the house look the way the house really looked." He was able to achieve this by bouncing the majority of the lights.

Summerspell was shot with wide prime lenses, a 75mm lens being the longest lens used in the film. By using wide lenses, it gives the impression of space all around. Even in the close-ups,

which were for the most part a 40mm or 50mm lens, the space lends itself to a feeling of solitude and sometimes emptiness. Wider lenses also kept the image as clear and clean as possible which was of utmost importance to both Shanklin and Elswit.

Since everything indoors was tungsten balanced, problems would arise when an actor would have to leave the house because of the action in the story. In those instances, Elswit would hang rolls of 85 gel outside "so that when the door was opened, if you saw a background, hopefully you'd be

looking through the 85 and the gel wouldn't rattle."

Summerspell was Elswit's first feature film and also his first attempt at 35mm. Besides working as effects cameraman for such films as *The Empire Strikes Back*, *Return of the Jedi*, *Raiders of the Lost Ark*, and *Indiana Jones and the Temple of Doom*, Elswit has also worked as cinematographer on *Waltz Across Texas*, and *The End of August*.

Summerspell was shot in 35mm on a Panavision P.S.R. 200 using Kodak 5247 (35,000 feet of which were donated short ends).

It took three years to shoot *Summerspell* with a space of a year and a half between one shooting and the next.

Putting together a cast and crew for a three week shoot is terribly difficult, as anyone who has ever made a film knows. Combine this with finding locations, the right furnishings, not to mention costumes, transportation, food, etc., and suddenly it becomes an enormously overwhelming task. Now imagine going back after a year and a half and trying to reassemble the same cast, crew, locations, and everything that would be involved in shooting additional sequences.

For director Shanklin, however, going back was inevitable. Originally intended to be a short film, its 45 minute length was completed in the initial shooting. Once she got into the editing room and took a look at a rough assemblage of the film, it quickly became apparent that visually as well as structurally *Summerspell* could be successfully expanded into a feature length film. Her motives for going these extra miles are clear: "Our goal was not to make a profit. We weren't out there trying to break into the market. Our goal was simply to make a very fine film as an off-Hollywood or independent filmmaker."

After this initial shoot, all of Shanklin's resources were exhausted. She went to work on a series called "Palmer's Town, U.S.A." for five months. During this period of raising funds,

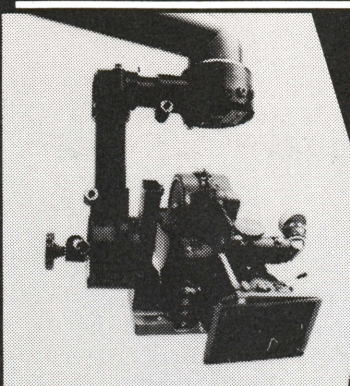
Shanklin and Elswit made what Shanklin calls "second unit trips." One such trip involved the filming of snow geese which accumulate only during the months of January and February. As soon as they had finished shooting the snow geese, the birds, as if on cue, all flew away.

After raising the necessary funds, the cast and crew were brought back together to do what amounted to another week of shooting. Obtaining the same locations was dealt with very creatively. As Shanklin recalls, "We did a lot of things on the basis of trade. Other than paying a traditional \$1,000 a day location fee, we traded work and labor on the house. We had to find creative answers for what would be called a severe cash flow problem." And she adds, "when you don't have a lot of money, all you really have is your personal reputation, your word, and your integrity."

In order to shoot in the house during the long, often sporadic course of filming, Shanklin promised 300 hours of work in trade on the house or in another of the owner's homes. "That meant," says Shanklin, "not only did I have a film crew, I also had a construction and renovation crew that was taken from the film crew and each time they allowed me to come back in; but it was only because I made that commitment to absolutely honor all of my agreements with them."

The majority of the furnishings used in the film were obtained through the set department of a film studio located in Los Angeles thus making their availability secure over this long period of time. Each time they would shoot, the furniture had to be collected, transported, and set up in original positions. Shanklin personally chose all of the furniture and dressed the house herself which she admits "was a wonderful thing because as the director you're looking towards the action, and to be able to choose your own hand props and your own set decorations is quite a wonderful luxury."

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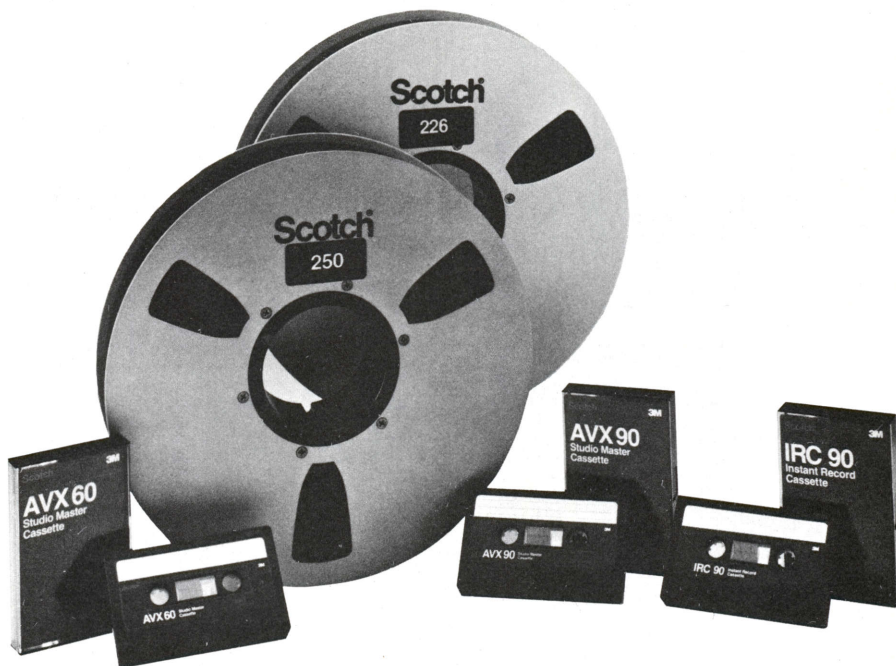
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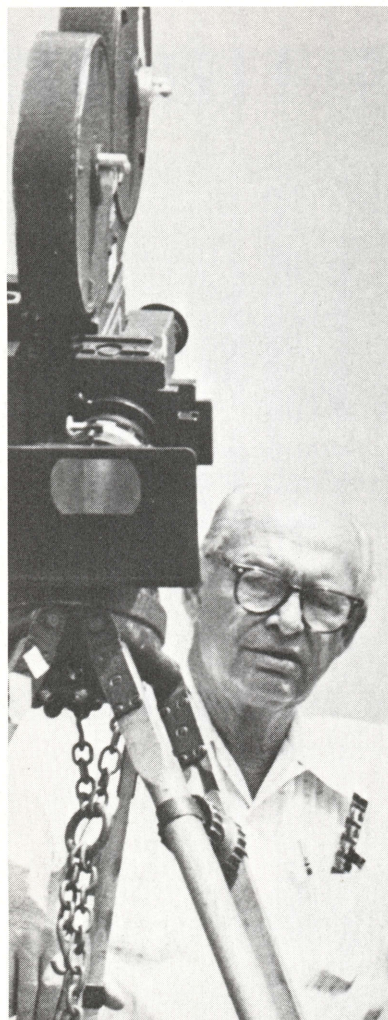
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The enormous task of recreating everything from lighting to costumes, hair styles to furniture placement, was partially remedied by cutting out frames of the work-print and using them to match up important details. The cast was also allowed to view their past performances in an attempt to help them recapture the characters they had been a year and a half ago.

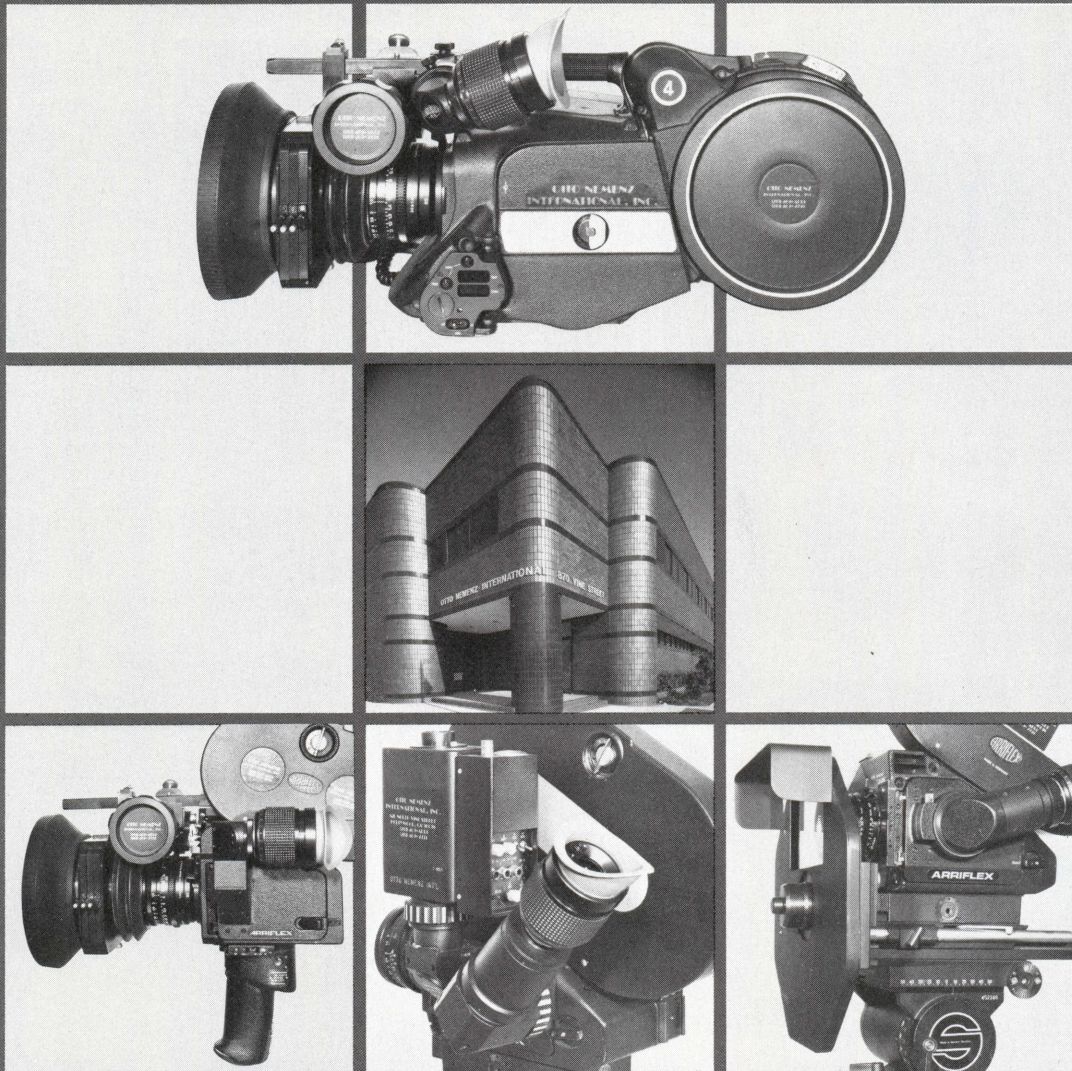
Since continuity was so important to the success of the project, Shanklin made certain that those individuals who started work on the more specific tasks such as lighting, sound, and make-up were there until the film's completion so as not to interrupt its original look.

The meticulous concern for consistency and detail, Shanklin admits, "is the astounding thing about *Summerspell*. People, too, are surprised at the consistency not only visually but also the acting and the whole sense of the thing. That was really my goal."

It wasn't the assemblage of the necessary items – lights, camera, etc. – that was most difficult for Shanklin, but reconstructing the film's essence. "It is very much like the process of writing," she says. "When you are writing a screenplay, for instance, you do a draft and then you go back into what it was you really wanted to say, you go back into the core or the essence of the piece. Each time we would have to recreate that in its entirety. That included the technical, creative, artistic, emotional, and psychological aspects. That was probably the toughest thing about doing the film."

Even with all of its headaches, frustration, and problems, Shanklin is one director who remains involved. "I'll probably always be very picky. Every director for whom I have great respect (she cites Kurasawa and Kubrick as two of her favorites) has a finger in every pie and I'm certainly that type. Directing is not just directing actors, it is the entire vision of the piece and everything is part of that."

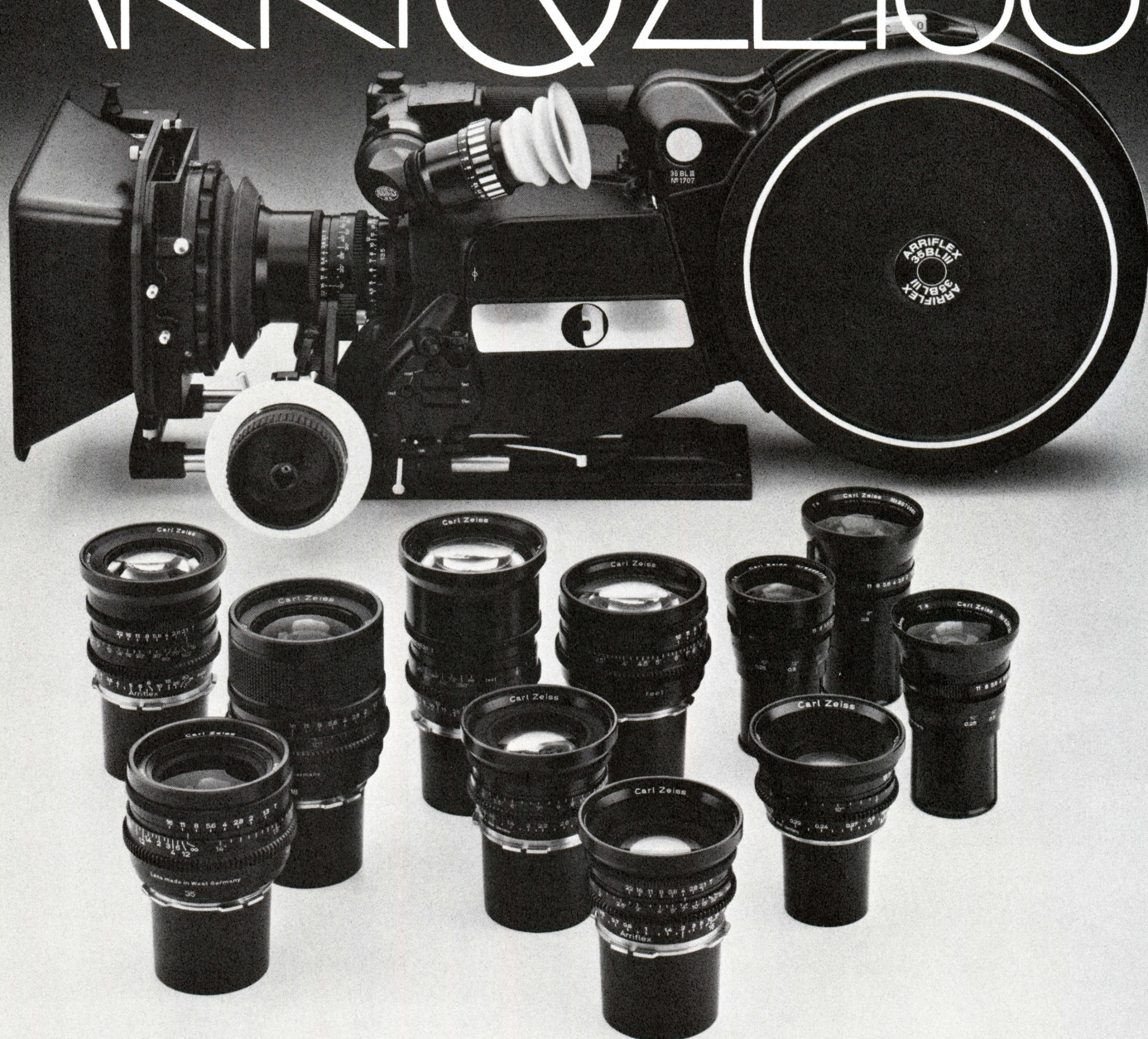
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Hovering over the Florida coastline, an Antarean spaceship seeks a landing spot.



Peterman Photographs

COCOON

by Paul M. Sammon

A gentle blend of science fiction and character study, Fox's *Cocoon* centers on an encounter between two groups of humans with aliens come to Earth on a very special rescue mission. Yet despite its fantastic storyline, *Cocoon* is one of the few recent genre films to eschew spectacle for story, keeping its optical effects as background shadings for its main concerns of plot and character.

"When I first got the *Cocoon* script from (producers) Zanuck and Brown," said director Ron Howard, "I was originally involved in developing another project. And at first I wasn't going to do *Cocoon*, because in some subtle ways I felt it was too much like

Splash (the popular 1984 romantic comedy-fantasy directed by Howard and spotlighting the romance between an ordinary man and a mermaid). *Splash* is sort of an alien story and *Cocoon* with humans interacting with aliens, is too. But I had always wanted to do a story dealing with people at a retirement age. And when I reread *Cocoon* I realized that this was my opportunity to film that story – with a little extra, added kicker."

Cocoon's director of cinematography is Academy Award nominee (for *Flashdance*) Donald Peterman, ASC. Peterman, who also shot such films as *Rich and Famous*, *Young Doctors in Love*,

and the forthcoming *American Flyer*, previously worked with Howard on *Splash*.

Based on a screenplay by Tom Benedek, derived in turn from a novel by David Saperstein, *Cocoon* not only features the talents of director Howard and producers Zanuck and Brown but a roster of other experienced talents as well. Lili Fini Zanuck, Richard D. Zanuck's wife, is the film's co-producer; in point of fact, *Cocoon* is the female Zanuck's project, one which she personally developed over a period of four years before finally placing the film in a "go" position. Production design is by Jack Collis, an Oscar nominee for his work on the *The Last Tycoon*.



Ralph McQuarrie's conceptual painting of the galaxy containing the planet, Antarea.

Below. Welch, Dennehy, Power, Nomad, as aliens, discuss a real estate deal for Florida estate.

The optical and miniature effects were under the supervision of Ken Ralston, of Industrial Light and Magic special effects facility, while the film's special alien makeups were handled by Greg Cannom.

Of Howard, Peterman says: "He can now look at a scene that we're lighting and discuss it with us in technical terms. On every picture Ron's worked on, he's been such a student of every department concerned with the making of that picture that he's become very knowledgeable about the total film process. I do enjoy working with Ron; he has a lot of good ideas, and we're always throwing notions back and forth at each other."

Although he has now directed four theatrical films, at the age of 31 Ron Howard is still probably better known to the general public as an actor. Beginning at the age of two, Howard's best known acting roles were as Little Opie and Richie Cunningham on the long-running television series "The Andy Griffith Show" and "Happy Days."

Fortunately, *Cocoon* en-folds one of the most impressive casts to ever grace a major American production. For the more youthful members of the storyline (most of whom, ironically, portray aliens) the *Cocoon* executives chose Steve Guttenberg, Brian Dennehy, Tahnee Welch, (Racquel's daughter), Mike Nomad, Barret Oliver, Clint Howard, Linda Harrison and Tyrone

Power, son of the late actor. *Cocoon's* cast also includes the likes of Don Ameche, Wilford Brimley, Gwen Verdon, Hume Cronyn, Jessica Tandy, Maureen Stapleton, and Jack Gilford. "There's really no doubt about it," says Howard, "*Cocoon* has a once in a lifetime cast a lot of directors only get to dream about."

A veteran of both the old studio system and the newer, independent producer-method of making motion pictures, Don Ameche had his own thoughts on the *Cocoon* experience in general and director Howard in particular. "*Cocoon* is my first science fiction picture. I don't have any particular affinity for this genre; in fact, the only recent one I've seen was E.T., and although I enjoyed it, I don't think I went as far along in that enjoyment as many others did. I thought E.T. was more a children's picture than anything else.

"But of course, styles have changed. Directors today work in much faster cuts than the longer, more sustained, more theatrical types of scenes they used in the old days. The new style is a bit more difficult for me, I must say. But I do enjoy working with the younger directors. And in Ron's case, throughout *Cocoon* he encouraged us to improvise. You don't know *what* he's going to get out of a scene.

"For instance, we had one scene where Hume, Wilford

and myself were walking through the woods. And Ron took twelve takes of it, and replaced the cameras five times, and it was shot with four cameras – *and* he allowed us to ad-lib besides. Then he printed five of those twelve takes. So you can imagine the leeway he has."

Principal photography on *Cocoon* took place from August 20 through late October, 1984, in St. Petersburg, Florida, a location chosen not only for its obvious reputation as a national retirement center but because, said Howard, "of a very interesting environment." Crew members totaled one hundred. Locations included the Sunny Shores Rest Home and a large, neo-Spanish estate on St. Petersburg's Park Street.

"When I read the *Cocoon* script I liked the idea of ordinary, elderly people in a retirement community doing the little mischief that elderly people find exciting, like sneaking into a deserted estate to use its hot tub and pool. But this pool has been invested with magical powers," says co-star Jack Gilford, "because these 2500-year-old cocoons are in them. By swimming in this pool, some of the elderly people become young again through many different ways – by romance, through dancing, and exercise. And to think that that pool was all provided by the film crew!"

One of the key locations



for the film, the pool house first began in the conceptual paintings of artist Ralph McQuarrie. Says *Cocoon*'s director of special effects, Ken Ralston, "Ralph was extensively involved with this project at the start of the show. He did some beautiful work, color portraits and scenic ideas that really steered people in the right direction. The pool house, in fact, that was built was partially based on a McQuarrie design."

Adding to an existing structure already standing on the Park Street estate, Jack Collis and his art department updated the building by adding a large skylight, installing numerous plants and trees and inserting certain other improvements as well. "The pool in the pool house was already there," said Collis, "but in a great state of disrepair. So we resurfaced it, put in new lines and tile and a new tile deck. Then we put in a very large mural on one wall. This had an impressive Venetian scene on it. It was painted on the West Coast in Los Angeles by J.C. Coakley, who has a backing company there. Basically, Coakley did it on one large, long piece of canvas that was then rolled up and shipped out to us on location."

Collis' and McQuarrie's design work throughout *Cocoon* was, of course, only as good as its cameraman, a fact that Ken Ralston fully appreciated. "I can never say enough about Don Peterman," Ralston explained. "His work on *Cocoon* was exquisite, really first class. On the special effects front it's nice to be able to shoot plates from the lighting Don's done - even though he *doesn't* use lights most of the time. I don't know how he gets away with it. For instance, he may have had bounce cards all over the place, but Don really had only one light lighting up the whole pool room."

"It's true that I do try to maximize natural illumination," Peterman says. "I've always lit that way. For instance, when I'm outdoors I try not to use any lights other than fill unless it's absolutely necessary."



"Specifically, however, for the various shots inside the pool house, I did the set-ups differently. For instance, when the old people come in and jump into the pool we left the skylight wide open for a kind of natural light effect. That was one look. Then we used heavy smoke effects all the time, because the pool house was supposed to have a humid, steamy feel to it. Then, at night, I tried to keep that look but I changed the color patterns; I'd bounce orange lights off the wall so that it would bounce that color into the water, giving me a blue and orange look. Finally, in the love scene between Guttenberg and Welch - and also when Jack Gilford is carrying his dead wife into the pool house to try to revive her - we used very low light levels, again mixing orange and blue, plus a lot of backlighting. Every time Ron gave me the chance I'd do a lot of backlighting."

Cocoon also features short segments of underwater photography (supervised by Jordan Klein) as the aliens make use of earthly dolphins to locate the strange extraterrestrial pods which the Antareans have come to our planet to retrieve. "I didn't do the underwater work," commented Peterman, "but I had already worked with Jordan Klein on *Splash*, and we know each other well. I did, however, contribute to the cloudy appearance of the



Steve Guttenberg and Welch, from different planets, fall in love.

water in the pool. We played that so that it seemed as if these cocoons, which were being kept in the pool by the aliens, were recirculating organic matter that was fogging up the water. To get that effect we simply mixed some sea water in with the fresh water. This gave it a little mystique, and prevented the pool water from being crystal clear.

"But as I said before, we had a lot of different lighting and technical styles on *Cocoon*," Peterman continued. "Before the old people got to feeling good in the picture, we kept all our lighting slightly at a cool level. Then, when they started feeling good, we warmed everything up. I also used different lenses. Wide-angle lenses on the old folks were used for their closeups before they started feeling good, and then 100mm lenses as they began rejuvenating, which naturally made the cast look better."

"I also mixed film stocks throughout the movie. Outdoors I



Dennehy, Antarean leader, speaks with Wilford Brimley, leader of the senior citizen group on Earth.

used 5247, indoors 5294. But I didn't mix stocks to get that warm/cool look. I used '94 inside simply because I work with very low light levels inside. Actually, it was a pleasure to work on a film where the emphasis was on people for a change, on their relationships, and not on the special effects of going off into outer space. To me *Cocoon's* entire story rested on these older people changing and feeling better and their relationships with each other and to the aliens."

Although *Cocoon* is primarily a character study, a number of physical and optical effects are scattered throughout the film to lend authenticity to its extraterrestrial storyline. However, not all of the film's effects were limited to spacecraft and aliens – at times problems were faced by the *Cocoon* crew on such mundane matters as acquiring the right type of boat. "In the film," said Jack Collis, "Steve Guttenberg's character is living on this run-down boat, so once we were on location I sniffed around until I found something, in Miami, that matched up to the script's description of the Manta III. We tried to give this boat, which was about fifty feet long, an interesting lived-in look, as well as the suggestion that it had been built in the 1930's. So we vested it

with a little character by building a flying bridge on the boat, as well as a lot of woodwork and some interesting cabinets.

"Then we built a dock on the estate with the pool house, intending to dock the Manta III there for some scenes we needed before moving out to sea. But we immediately ran into a problem; we only had a depth of 15 inches of water by our new pier to dock a 50-foot boat. So I designed, and we had built, a non-functional duplicate boat that would only draw 14 inches of water. Down to the waterline this second Manta was an exact exterior double of the first one. The big difference was that it was absolutely flat bottomed, like a jonny boat, and floated on empty oil barrels. We had it towed out to the Park Street estate." As for the actual Manta III, these real-boat locations were filmed offshore at Tierra Verde, Florida, in the Boca Ciega Bay. The *Cocoon* unit also filmed the real boat on location in the Bahamas for approximately ten days.

Besides its stellar cast, duplicate boats and spacecraft, *Cocoon* also features a large contingent of local extras, retirement-age recruits plucked by the production from the confines of

old-age homes that the film features. As Peterman discovered, utilizing elderly extras lent itself to some unique technical problems. "Ron likes to use the B camera a lot, and when we can work it out, we use multiple cameras whenever possible," explained *Cocoon's* director of photography. "One good example of this was our work with the older extras. Whenever we had a minimum amount of work for them, it was the better thing; they simply didn't have the stamina to go through a lot of retakes. So we would use multiple cameras during a shot to cut down on their having to just stand around. In the rest home we tried to light through the windows for a natural look.

"We did a sequence at an old ballroom called The Coliseum, which had been there since the Glenn Miller days. It's a huge place with laminated arches covered with yellow and blue lights. We replaced all of these with orange lights, about 300 of them altogether. Then we surrounded the dance floor with white milk-glass about three feet high and put corrected fluorescent lights behind them to give us a reflection or glow on the floor. We shot there all day and the only other source of illumination was three 2,000 Mighty Moles bouncing off of 4 x 4-foot white cards. We used 1/2

CTO gels on these lights to match the others, and also added some small practical lamps with little shades on all the tables.

"A lot of work we did for the big scenes with the older people were also done spontaneously, and a lot of it was done hand-held. For instance, in some of the argument scenes we got right into the middle of them with a hand-held camera. I'd say about 30 percent of *Cocoon* was done hand-held. We also used a dolly a lot, and a new stand-up wheelchair-like rig that we utilized throughout the film. Ron likes to shoot a lot of set-ups, to give him a lot of variations, so we always tried to keep this film going, movement and energy, wherever and whenever we could."

Movement and energy abound during *Cocoon's* climax, as the retirees, young earthlings and aliens all find themselves pursued by the local coast guard before the Antarean's spacecraft makes a surprise appearance. "Through most of *Cocoon* we used two Panaflex Gold cameras and an extra high speed Pan-Arri," Peterman says. "We used all three during the night chase where the old folks are trying to get away and the Coast Guard is after them. We spent four nights out on location shooting that."

"To light this sequence we used a Night Sun light on a helicopter to shine down on the Manta III. Plus, I put an extra par light on each Coast Guard boat that was chasing them. I had my own camera crew on those boats, dressed up in Coast Guard uniforms, who spent their time flashing these lights at the camera and at the people on the boats to back-light them. And that, plus three little practical lights you see under the Manta, were all the lights that I had. There was no artificial light used in that scene at all, only that which came from the helicopter and the boats plus light from red flares which were shot 100 feet into the air periodically. And that was tough, because I was dealing with very low light levels those nights, at about five foot candles. But it worked out great."

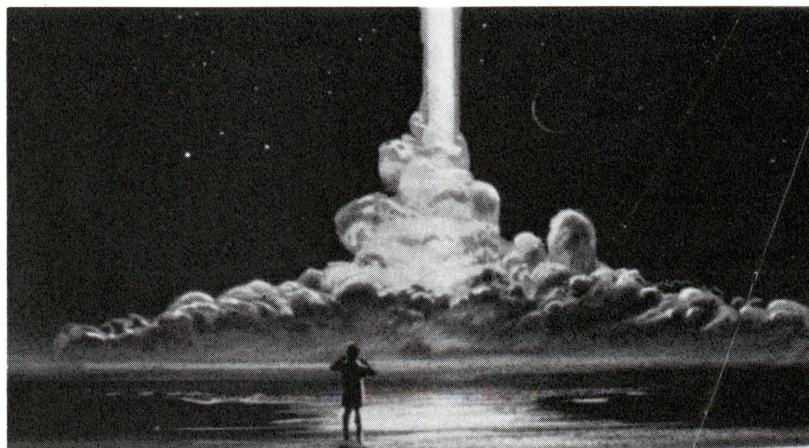
Not long after the chase begins the alien ship itself appears, signaling the climactic special effects sequences which, until now, the film has been avoiding. "But in the design of the special effects we purposefully tried to de-emphasize any spectacular elements," said Ken Ralston. "Instead, we concentrated on trying to bring an exquisite beauty to our shots, ones that would match up to Peterman's work. In the end, though, we actually ran through the special effects gamut on *Cocoon*, although there was never an excessive amount of any one technique other than a lot of optical work dealing with the aliens interacting with the humans, as well as a hell of a lot of animation and some very difficult rotoscoping. *Cocoon* also features a bit of stop-motion work with puppets on a miniature 20-inch long Manta III, that we shot against a blue screen at ILM for the scenes of the boat and the saucer."

"We also did some animatics, very rough video animations, at the start of this project for the key effects sequences, to give us an idea of what we could and couldn't do. As I recall we used those animatics to work out the moves of the alien ship, which was a Ralph McQuarrie design from which we built our model. We shot that using a bit of motion control. Their craft is an old-fashioned flying saucer, really. It's a clean, graceful design that Ralph specifically imposed to get away from the type of heavily-detailed

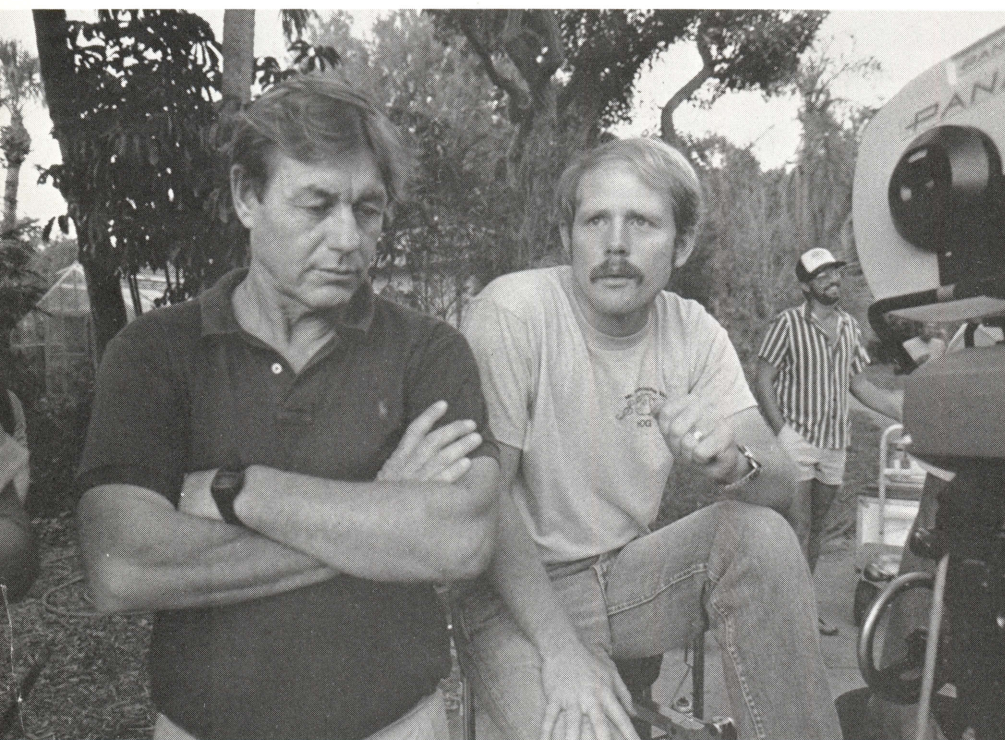
ship you normally see in films today. It's been simplified, as have the aliens." The Antarean saucer and all other plates were shot by Ralston on the Florida locations, in ILM's customary VistaVision format.

During *Cocoon's* climax the four Antareans finally reveal themselves in their true form, stripping off their human "husks" to reveal the small, graceful creatures beneath. "The husks were very tough to do," explained Greg Cannom, *Cocoon's* special makeup supervisor, "because we had to come up with something that could be carried around or draped over objects and still retain a recognizably human shape. So I used Latex 610, or Skinflex; it was only 1/16 of an inch thick. The only people playing aliens that I pulled a full-body cast off as a first step in making these husks were Mike Nomad and Tahnee Welch. I also did casts of the other main alien actor's heads - and I did it with their eyes wide open. To achieve this without hurting them I had the actors wear special scleral contact lenses and eyedrops during the casting process. I also did these head casts very quickly, in about eight minutes, using dental alginate. Then I simply poured my skinflex into the molds and pulled the husks. But as thin as they were, it was a very, very delicate process."

"Basically," continued Cannom, "the aliens themselves are composed of a foam appliance head which blends down into a



Painting by McQuarrie shows boy watching from shore as unique atmospheric turmoil occurs over the sea.



Peterman and Howard on the set of *Cocoon*. Below: Antareans Mike Nomad and Tyrone Power, Jr., examine a mysterious cargo from under the sea.



skin tight suit. This was painted white, so that Ken and his ILM crew could composite in their optical light effects a little bit easier. I also used slight fingertip extenders on the aliens hands, and some special contact lenses done in England and obtained by Martin Greenspoon. This particular type

of contact had never been used in America before, although you did see something like them provided by the same company in *The Keep*."

Inside the alien costumes were "four delicate, thin dancers we'd hired specifically for the parts," explained Ralston, "three

of them were shot for their scenes up at ILM in San Rafael in front of a blue screen over a two-week period. But to give one of the aliens a supple expression of movement, we experimented with shooting the fourth dancer – who was an excellent swimmer – underwater, by filming in a clear tank and then pulling a high contrast matte off that. The final result, which was – excuse the pun – very fluid, was a nice alternative to hanging the dancer off a traditional wire-supported flying rig harness. And we shot this at about 48fps, using the ILM Empireflex camera that was developed for *The Empire Strikes Back*.

"Another area involving our working with the aliens involved a lot of rotoscoping and optical work," concluded Ralston. "There's a scene early on in the film where Brian Dennehy pulls down his eyelid and a little light flare pops out; that's nothing compared to the light glows where the unmasked aliens and humans are interacting with each other. For those scenes we shot some oil effects at high speed, and water effects, and different reflective effects. Then we used this footage in the optical area, inserting them in with the aliens and giving them glows and diffusions, putting all these flying light objects in with them. It was complex, tedious work. But it was worth it. When the aliens open up their skins, the light just pours out of them."

At *Cocoon's* climax, the alien ship pulls the Manta III from the water, taking on board its alien pilots and the fortunate elder earthlings who have decided to leave Earth with their new-found friends. Besides using the aforementioned miniature saucer and boat shot at ILM this sequence also employs the full-scale flat-bottomed duplicate Manta III, which was shot against a 20 foot high, 30 foot blue screen inside a coast guard hangar at the Largo/Clearwater Airport in Florida. Under the supervision of Joe Unsinn Sr., head of *Cocoon's* floor effects,

the 50-foot boat mockup was placed on a large rocker assembly which was moved by "grip power" to simulate its movement in water. Ritter fans were placed out of camera range for the stormy wind effects; three hand-painted cycloramas (two 25 feet high and 20 feet long, one 20 feet high and 80 feet long) depicting an overcast seascape were then also positioned around those areas not taken up by the blue screen. Scrimms were mounted on wheeled wooden frameworks that allowed them to be easily moved about for various shots.

"The blue screen we used in the hangar for *Cocoon* was the same one used in *9 to 5* for that animated fantasy sequence with Lily Tomlin," explains Ralston. "It was backlit using fluorescent light. The plate we ultimately composited over that screen had a number of different elements in it, including some tank-produced cloud effects, a starfield, and the rim of the miniature saucer moving into the shot; the saucer itself has produced a storm all around this area."

"*Cocoon* was the first time I'd ever worked in front of a blue screen," said Don Ameche, "although I certainly stood in front of many rear-projection process screens in my time."

The final touch on *Cocoon*'s finale centers on the blazing light source that washes down on the Manta III as it is being carried aloft, a light used both in the coast guard hangar and on certain nighttime location sequences.

"When we were out on the water," recalled Peterman, "we had, as we called it, the BFL – big effing light – down on the dock at night, when the cast and crew were all onboard the real boat. Now the BFL is composed of 144 par lights and is a light that 20th Century Fox made for another film. We had all four sources on the BFL turned on that night, and at 100 feet, with nothing in front of it, we were getting an exposure reading of 11 at 400 ASA, which is really high. Then we exposed it a f2.8-four stops overexposed. I felt that this perfectly suited the idea of a hot alien light coming from a mother spaceship."

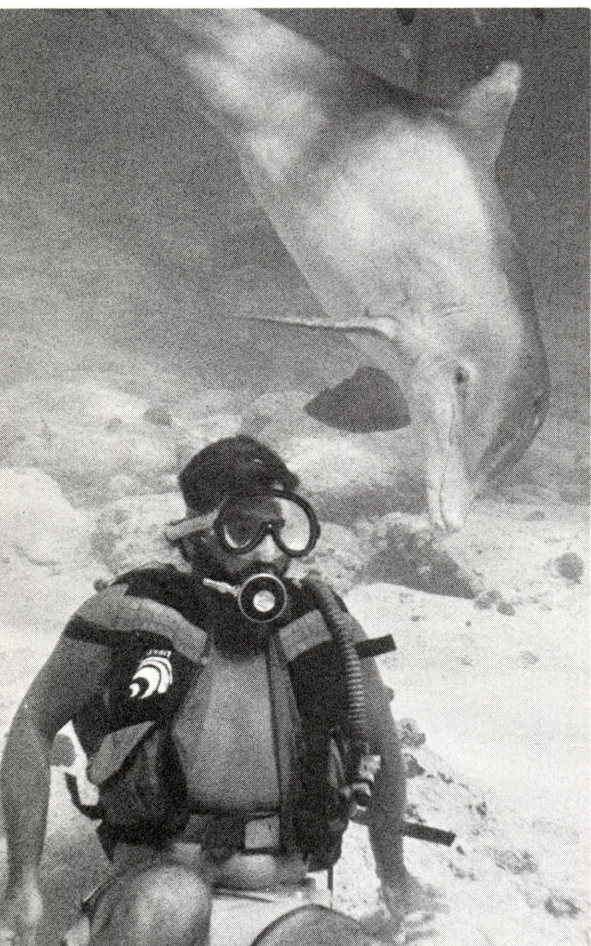
"When we were inside the hangar and lighting the duplicate Manta," Peterman continued, "the BFL was four stops overexposed, again for that hot, unearthly look. We hung the BFL from a crane to simulate the spaceship's landing lights; it was held by six steel cables and shackled to a cross beam. Then we surrounded it with black velvet to cut down reflective problems, and scrimmed it over with paper to diffuse the light a bit. The last step was in fogging up the hangar with mineral oil smoke. It was an effective approach; the BFL performed very handily when we needed it."

Gwen Verdon says, "For me, *Cocoon* is about getting old. Period. And one good thing about this film is that it may show teenagers that we older people have the same feelings as they do. I think that's a good message. And maybe this movie will make retired people – the ones that just sit in their chairs and watch television all day long – get up out of their chairs and do something. That's an even better message, don't you think?" ■



Power, Nomad, Brian Dennehy and Welch, as visitors from an alien planet.

Into the Deep for Cocoon



by Jean Turner

Thirty feet beneath the surface of the crystal clear Bahamian seas, the sets representing a lost Atlantis were re-created and cinematographer Jordan Klein was the underwater expert assigned to shoot the scenes for *Cocoon*.

As Klein explains, the sets consisted of columns and statues, properly aged and encrusted with coral and located in proximity to natural coral beds which lent their own colors to the surroundings.

As the story goes, denizens of another planet arrive on Earth to retrieve "cocoons" left behind at another time, presum-

ably at the fall of Atlantis. They are assisted by dolphins in the search for their kin and much of the photography includes interplay of the actors, the trained dolphins and the underwater city. Scenes involving the dolphins were shot in daylight, but many other sequences were photographed night-for-night underwater. As far as Klein knows, this was a first.

"When I suggested night-for-night shooting for certain scenes, the producer quite naturally did a double-take, and agreed reluctantly to try it. I don't mean we shot late in the afternoon or day-for-night - I mean dressing the set at four in the afternoon and following our evening meal, going down in the pitch dark and doing the scene," says Klein. "Obviously the main problem here is light sources. We suggested to Jack Collis, the production designer, that the main source actually be what the extraterrestrials would be using in their search of the ocean floor.

"We could not use top floodlights, of course, so the other lights used were shaped like Japanese lanterns, anchored to the bottom and floated in various places on the set to make it esthetically pleasing as well as practical."

Night time difficulties for some of the cast and crew were the uncertainties of the total darkness outside the immediate action scene. "Water sucks up light much quicker than air," Klein explains, "so naturally, there was some apprehension among those involved about the darkness. Also, it was impossible to see the cables to which the lights were anchored so we had a few collisions, but nothing serious."

The lighted area amounted to about 60 x 40 feet. The swimmers carried pulsating

flares which reflected light from the coral, giving a sought-after mystery to the night scenes. Klein says he used one stop: f/3.5, and shot with Kodak 5294 at 400 ASA. He did not push the film and very little color correcting was necessary at the lab. He pre-focused his camera and carried a flashlight to check his readings. Klein used no filters for the night shooting. Klein, whose company builds underwater camera housings and lights in Ocala, Florida, used an Arriflex-3 for his underwater work, and his own specially manufactured housing.

For promotion purposes, some underwater footage was recorded on tape with a Betacam. However, Klein says there are still a great many more difficulties in shooting video underwater than with film. The electronic gadgetry is more readily affected by salt water than the mechanical film camera and is therefore feasible only for short periods of time. Video underwater also requires more crew because of added equipment.

Dolphins, important to the story, since they aid the aliens to find their cocoons, were captured in the Bahamas and trained there for their part in the show. Klein was obviously entranced by the dolphins as was everyone who worked with them.

According to Donald Pennington, modelmaker, who assisted dolphin trainer, Kathy Crager, they can not really be trained. However, if you reward their normal behavior, dolphins can be encouraged to repeat the behavior on command. "In order to get them to travel through the water, we put a chain on a piece of plumbing pipe and we would shake it underwater. The dolphins would swim toward it and we

would feed the ones that got there first. That started to reinforce the habit of coming to the noise. Eventually, we could get them to swim through frame with the divers by rattling the pipe," recalled Pennington.

"We tend to think of all dolphins as being like Flipper. They can be much more aggressive and even dangerous. Flipper wasn't a very realistic look at dolphins. Anything or anybody new and strange in the water, the dolphins naturally swim away from. They had to get used to us. At first, as we introduced ourselves into the pen, they would come up to us and sound us. You could actually feel it as well as hear it. They would identify you so that each time we went in the water they could tell who we were. They knew if we were 'new' or 'old.' As they got used to us, each time we got in the water they would kind of swim around us and as soon as they knew it was us they would pay little attention.

"Dolphins are very unpredictable. They have a mouth snapping process that they use as a warning and as a way of establishing pecking order in the group. It is extremely loud. You could hear it 50 feet away like it was next to you. Kathy told us if they ever did that to us not to get frantic but to swim away from them because at any given time you can be where they don't want you. You are being warned to get out or they will get physical with you. I was swimming through the pen one day and I heard this snapping and it sounded much louder than normal. It was so close I was afraid to turn around and look, so I just kept swimming. When I got to the other side, I turned around and two dolphins were about three feet behind me. I was told later that they were about a half an inch from my feet snapping like crazy. I waited about three or four minutes and I swam back across the pen and they completely ignored me. It was just at that particular point in time I was in a place they did not want me to be.

"We got to touch them and it was really a treat," Pennington says. "The Old Man was my favorite. All dolphins, even the young ones, have scars on their bodies. When they get amorous, they get very physical and they bite. Well, he was covered with scrapes and scars. There was one dolphin in the group that had been attacked by a shark and half its fluke was missing. And in one of its fins you could actually see the jagged teeth marks, just like the cartoons. Kathy was quite amazed that it had actually survived the attack and had then lived long enough to heal."

Pennington describes: "a very large netted area to try to confine the dolphins and then they had a small holding area. The small area was probably 40 by 40 feet. At any time, if they had had any inclination, they could have jumped over the boom and swum away. They never tried to get out. When they finally took the net down to let them go they stuck around.

"It was such a great experience to work with them. I got kind of attached. It was sad to let them go because we knew we would never see them again. I even stayed a few extra days and we went out to see if the dolphins were still around, but they had gone to their normal haunts, wherever dolphins go - to the real Lost City of Atlantis? It was a very real treat and the sad thing is that it will probably never happen to me again."

Klein and Pennington agree on the sadness of leaving the dolphins. "When they were turned loose and didn't show immediate inclination to leave, we went back underwater to see if they could be photographed 'in the wild.' They could and did remember their cues," Klein remembers. "Ron and I tried all sorts of different shots until we finally ran out of things for them to do. I must say, it was a touching thing when we came up out of the water for the last time and knew they were down there and we'd never see them again." ■

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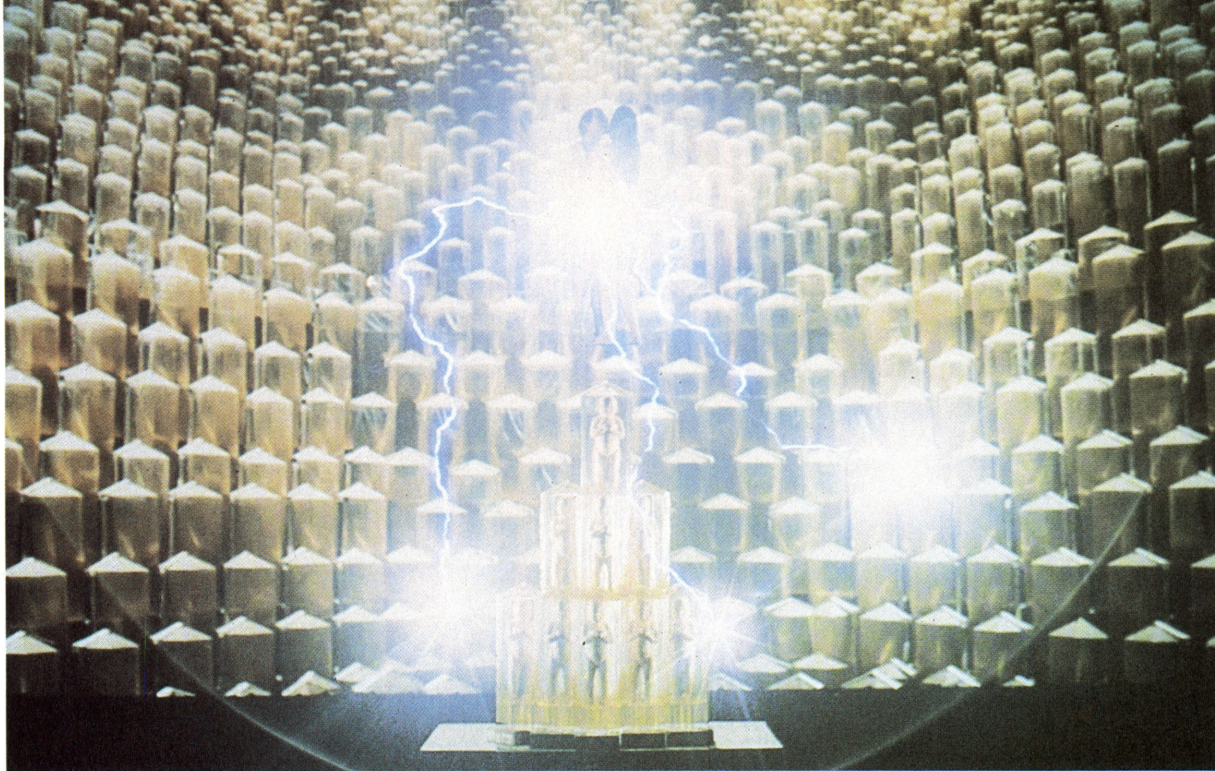
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Eerie Effects for **LIFEFORCE**

by Robert Bealmea

Steve Railsback and Mathilda May make the final transition to their eternal home.

Ask anyone in the business of making special effects movies what he wants and you will be told, "Effects no one has ever seen before." This reply is common, expected, and even held to be amusing among the workers, technicians, and specialists in the elite field of motion picture special visual effects.

Yet, however amusing, the fact remains that with millions of dollars riding on each new effects film, original, never-before-seen effects are routinely demanded by producers and directors and, perhaps more importantly, by the ever-more-sophisticated movie-going audiences. The risks of reaching into the unknown to find ever-new effects is simply part of the act and one of the prime reasons why there are so few noted practitioners of the art. The romance is attractive, but few are able to meet the challenge.

Lifeforce, at \$22.5 million is the most lavish production

to date from Cannon Films. The special effects were done by Apogee, Inc., and its complement of master craftsmen. Tobe Hooper, the maestro of reality where none exists, is director. *Lifeforce* is not only full of new, delightfully frightening, and challenging special effects, it is a smoothly-crafted, mesmerizing film as well. The story concerns the invasion of London by alien, vampire-like creatures, and the British Government's dilemma over whether to nuke England or fight the aliens. The picture costars Steve Railsback, Peter Firth, and Frank Finlay and introduces the beautiful French actress Mathilda May, who, as an immodest vampire, remains naked through a large portion of the film.

"The spirit of the book is certainly there from my interpretation of the reading," Hooper says. "Though Colin Wilson's novel was set in the future, I made it a contemporary piece for identification. Also, I tied in Halley's comet,

where they make the find of the alien ship. It has been millions of years in the coma of Halley's comet, traveling as a parasite of sorts. But, basically, I think the movie embodies the same spiritual feeling that Colin Wilson intended."

Even though *Lifeforce* is an unconventional movie in many respects, John Dykstra knew that his work on it should begin in a conventional way, breaking down the "wishlist." "Special visual effects storyboards are a wishlist," explains Dykstra, "They include everything that the director and producer and other creative persons involved in the project would like to see in the film. Some of the storyboards are necessary to tell the story, others are embellishments, and another group falls under the title of, 'Let's wow them!' The budget normally decides what stays in."

Dykstra realized the challenges of doing *Lifeforce* "included having to work in Britain

for a portion of the production, shooting the live-action components that would later be combined with post-production and process, seeking out the capabilities of British crews and British technology to provide those aspects of the film which would allow us to work with equipment that was available in Britain rather than having to ship it over, and determining what portions of that equipment had to be brought from the U.S. in order to meet special requirements”

Dykstra flew to London to discuss the storyboards with Hooper, art director John Graysmark, associate producer Michael Kagan, director of photography Alan Hume, and the British crew, including Nick Maley, who did the impressive prosthetic effects and John Gant, who did the challenging floor effects. “We talked over the storyboards,” says Dykstra, “to determine how many special effects scenes could be afforded, how many were necessary to tell the story and how the work was to be divided between the different types of effects.”

Dykstra, a firm believer in planning ahead, would have been happier with a longer period of pre-production, but allowed as how things went very well because of Hooper’s knowledge of effects and the professionalism of his co-workers.

“We looked at the storyboards together and began doing the budget, providing costs for miniatures, original photography in blue screen, and in conventional process, both still and motion picture. Integrated into that budget was the work that was to be done by technicians that we would be working with in London.” After breaking down the designations of specific areas of involvement, it was determined what visual effects work would be done at Apogee and what work would be done in London at EMI Studios.

“Since completion of live-action photography was planned to precede any post-production addition of visual effects,” Dykstra says, “We decided to concentrate fully on the pho-

tography at hand before even attempting to determine the quantity of post-production work to be done later in Los Angeles.”

Apogee’s commitment to the “photography at hand” took the form of Dykstra working very closely with Hooper and the live-action crew. “Some of the things that we had to determine specifically, to work in conjunction with live action, other than the normal kinds of things that you work out such as process photography, blue screen photography, and prosthetic gags that work with pieces that are to be added later, included some effects that are unique to this show. For instance, when the vampires are in their disembodied state, they travel as light energy. These disembodied vampires move through the streets of London as bright ‘bolts’ of energy that suck the life force from people, leaving shriveled corpses and massive destruction behind them. To achieve this effect, we needed highly controlled reactive lighting to occur during the live-action shoot,” says Dykstra.

“John and I knew basically the kind of ectoplasmic visual we wanted to happen,” explains Hooper, “but we didn’t know exactly what it looked like. We interpolated the reactive lighting to match the lighting that John would create and later put in the atmosphere, the spirit life.”

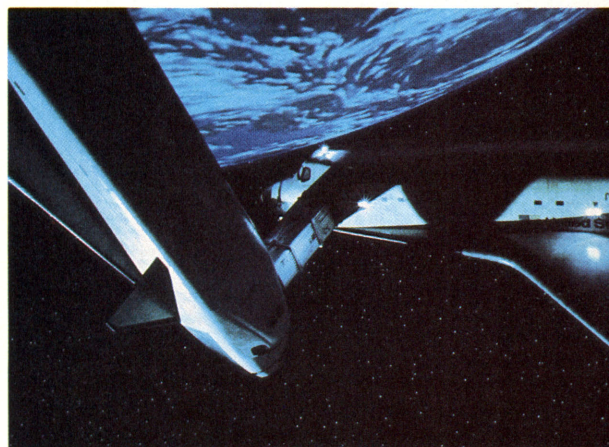
About the scenes where the ‘bolt’ travels through the

streets of London, Dykstra says, “When we worked with the people in the streets who were being devastated by the vampires, we used a light that was mounted on a cable that moved along above them, casting shadows on the walls and the surrounding area. Later, on our stage at Apogee, when we added an artificially generated light flare, it appeared as though that light flare was really the source of illumination for those people.”

“It was all prefigured from the boards,” Hooper adds. “We knew where we had to have our special reactive lighting. John and Alan Hume worked together on coming up with various devices that would give off different kinds of light.”

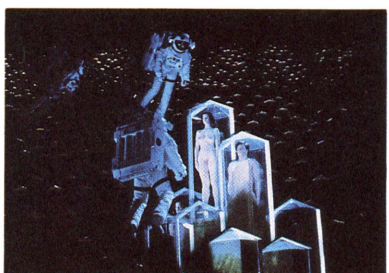
To Dykstra, reactive lighting was crucial and he gives a lot of credit to Hume who “was very much involved in making cer-

Top: The American and British shuttles join in space. Below: Astronauts enter the alien ship, and find it alien, indeed!





Top: *Vampiric bolts lay waste to London. Lifeforce circles about Railsback and May as they are joined for eternity.*
Below: *Astronauts discover the crystal coffins containing the vampire aliens.*



tain that the reactive lighting worked well."

Another environment that demanded reactive lighting was in the scenes in which humans were facing attack by the Primary Vampires. Dykstra explains, "When a Primary Vampire, a vampire who is from the alien craft, attacks someone, a halo of lifeforce energy appears around them. Mathilda May, who is a Primary Vampire, has a very unique aura of light appear around her when she seduces her first victim, the guard who was set to protect her. A moving halo of energy is created around them."

Of another such scene, Hooper commented, "Nick Maley made some prosthetic devices that were life-size, full-size articulate robots that were incredibly shriveled and skinny. They were controlled by radio and cabling and some of them would take twenty people to operate. John and I figured out the reactive light on them, then incorporated that when the spirit force, the lifeforce, is drawn from one of the prosthetic robots to another. The robot losing his lifeforce shrivels. These devices had vacuum pumps and liquid bladders that were in sync with one another, so that as one object took on the lifeforce and expanded back to its normal self, the other normal-looking robot would deteriorate to a shriveled state. We called them 'walking shriveleds.' They are so life-like that people thought they were very skinny actors with makeup appliances on them, but they're totally mechanical and electronic."

"The reactive lighting involved in the deaths of the two male vampires was also critical," Dykstra continues, "We used flash bulbs that were specifically timed to change colors during the scene so that when we changed our colors subsequently during post-production, those colors would be reflected in the live-action portion of the photography."

"Sometimes we used as much as \$15,000 worth of flash bulbs just to shoot a single scene,"

Hooper comments. "The light was alive in those shots. It was more than just strobing; it was a very strange effect we used for the reactive lighting for the spirit lights."

Once Dykstra had worked out the live action portion of the material from the point of view of reactive lighting, he still had to confront process. He says, "That came at the end of the schedule and in this particular environment, we had to create the interior of a cathedral. It turns out that most churchmen don't want their cathedrals to be in a vampire movie, so we photographed the interior of an ancient hall in London that became our cathedral. We projected the picture of that interior onto a screen, provided a foreground, and the rest of the scene was primarily a front projection piece."

The cathedral interior was photographed on large format and presented on stage six of EMI Studios, which Dykstra describes as "250 feet by 100. We put a 70 foot screen at one end of the stage and because the field of view was wider than the screen could provide. We had to bring in 'wings' in front of the main screen. The wings were also covered with front projection material and were placed in such a way that their edges occurred in shadow areas of the still plate and were netted down to reduce exposure so they balanced against the background. We ended up with the stage floor littered with bodies, a few foreground pews and rails, and a cathedral interior which is all on screen. The balance worked very well. In conjunction with the front projection photography, we did a light effect, which was a beam of light going up through the top of the cathedral representing the lifeforce being transmitted to the alien ship. That was by using the other side of our fifty-fifty mirror and putting a very, very carefully cut mask in front of an illuminated surface to make modulated light move up through the cathedral. The final aspect of the material that we did in Britain included the transformation of one of the

prime vampires at the end of the film from a human shape into his original batlike form. As it sometimes happens, this was a decision of the moment, as opposed to something that has been carefully planned. These moments are fun. We discovered that the use of a CO₂ fire extinguisher to obliterate the image of the human form and then reveal the image of the batlike form on a soft cut cross dissolve was very effective."

Another facet of Apogee's work involved blue screen photography. Dykstra says, "That included our astronauts as they approached the alien ship, when they are enveloped in the interior of Halley's comet, the coma of the comet, and subsequent to that, the interior of the alien ship when the astronauts explore it. Because we needed to see the faces of the actors in these situations, we used the blue screen. For portions of this material we used a conventional transmission blue screen which we built in London. We used our transmission screen with its particular formulation, which we built in conjunction with Stewart Film Screen, to do the close-ups. For the wide shots of the astronauts hanging on wires in front of the large front projection screen, we used the Blue-Max system which was also used in *2010* and *Dune*."

Since all the live action was being shot in London, Apogee had to ship motion control equipment, including 4,000 pounds of motion control track, and other specialized machinery, provide a screen for the Blue-Max projection system, and a transmission blue screen for the close-ups. With the hardware, Apogee sent along electronic specialist Alvah Miller and grip Mark Cane to set up the different systems and see them into operation. Miller was a perfect choice for that job since he and Jerry Jeffress designed, developed, and produced the industry's first modern motion control system. One of Apogee's owners, Miller heads up the electronics department and likens the early motion control system he developed for *Star Wars* to a Model "T" in

comparison to the system in operation at Apogee today. Also from Los Angeles was Blue-Max co-designer, and recent winner of an Academy Technical Achievement Award, Stephen Fog. He joined the crew for several weeks to lend support to the Blue-Max projection system.

Apogee's camera crew, headed up by cameraman Douglas Smith with Maryan Evans to assist him, went to England to shoot the motion control photography. Smith had been to England as a tourist, but this was his first time working there. He noted that "the English camera crew structure is different from ours when it comes to getting a cup of tea. The camera and editing assistants are in charge of getting tea for the rest of the camera crew. I grew to appreciate that. It was an opportunity for me to have a moment to myself to think things out while the crew was at tea."

Smith explained why he worked with a larger crew in England than he is accustomed to at home. "I worked with nine people on our motion control stage there and usually I work with four at most. The reason was because we were separated from the main EMI Studio. They rented a stage for us at a television studio that was about four blocks away. It was empty. It had formerly been Lew Grade Studios. The BBC has just bought it and they were bringing it up to speed, but when we first got there we were alone. There were only our five cars in the parking lot of this giant studio. So, being a totally separate unit, we needed to have the support of the extra people."

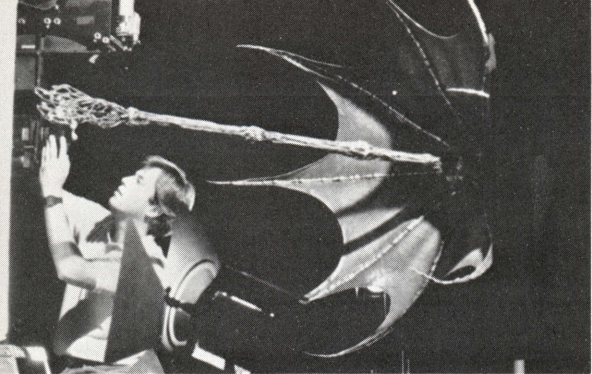
At Apogee, the machine shop and model shop and electronics department are just steps away from the stages. "Having support at hand is simply good business," Smith pointed out. "Rather than have us lose time, the production made support available all the time whether we actually used it or not. This was very helpful, but for technical assistance we still had to telephone Los Angeles a few times. We learned that if we were going to

have a technical problem, it was best to have it early in the morning, since there is an eight-hour difference between London and Los Angeles. We could lose a day because of the time difference unless our problem happened early. Thankfully, we never lost a day, but several times it was necessary to find another way of getting our shot."

Smith, another of Apogee's owners, started working in special effects photography in 1975 for Industrial Light and Magic at their Van Nuys facility. His first job was as an extra hand. *Star Wars* was in pre-production and they were gearing up with staff. "I just happened to be available," Smith confided, "when the new motion control equipment was being set up. Richard Edlund, the cameraman, was without a crew yet so I helped him run the camera back and forth and do general testing. That's how I got started in effects photography. John Dykstra and Richard Edlund were my teachers. I started on *Star Wars* as an assistant cameraman and a lighting rigger. On *Battlestar Galactica*, I became an operator on effects photography."

Motion control photography was used in almost every shot that Apogee did for *Lifeforce*. "We have the freedom with our motion control to move the camera with a live-action shot," comments Smith, "then go back in later and matte miniatures and models into the same shot, and the exact same camera move will happen with both shots. So you don't have to have a static or locked-off camera. This wasn't true in the past. Traditionally, effects shots were always locked off."

Apogee prefers using VistaVision as its working format and in England used a VistaVision stage camera that Smith says "was built in the fifties. In our facility at Apogee, we not only use the older cameras, we also have custom built and designed cameras that are more versatile. The lenses are standard Nikons modified for our particular use. By using Nikons we have a very wide range of millimeters to choose from, with con-



Camera assistant Josh Morton prepares an alien ship model for motion control photography.

sistent quality, giving us the most flexibility.”

Apogee’s camera crew spent the three and a half months they were in England shooting the main alien ship in its various forms, and the balance of the time shooting large matte paintings.

Smith found shooting the large British models quite interesting. “The main alien ship was 15 feet long, heavy, and required some unusual rigging to hold it in place. We also had a close-up section of wall surface from the alien ship that was 12 feet high and 25 feet long. It was built at an angle of 60 degrees from horizontal and all the different angles that were required to shoot it made for some interesting pipe rigging for the camera. I’m used to having my camera on the end of a boom with 360 degrees of roll available and being able to swing the camera to an infinite number of positions. If I wanted to change it a sixty-fourth of an inch over East, West, North, or South, it was no problem. However, with a pipe rigged camera, if I wanted to move the camera a half inch, we might be looking at a half hour of pipe rigging. The camera, with its motor, weighs over 100 pounds, the gear head weighs 150 pounds plus the plate it goes on and the pipes to mount all that. Add that up and you’re talking about suspending something that weighs over 300 pounds and having to do it on something that must remain rigid for motion control photography. If you want to suspend the camera upside down it takes some fancy rigging to get it that way. If you’re locked down and want to move the camera over an inch, sometimes it’s not possible to just loosen the pipe clamps and move

it. Sometimes you have to rebuild the pipe rig to do it and you have to bring in support people to help. It wasn’t like working at home.”

When discussing the effects for *Lifeforce* it is impossible to avoid the subject of reactive lighting. Smith says, “The most interesting challenge to me on the shoot was the amount of the ethereal stuff, the laser effects, the reactive lighting instead of just models. *It was a totally different direction from what we have done in past films.*”

The reactive lighting as explained earlier was the light used during live action to represent alien forms that were to be created and put in later by Dykstra at Apogee. Dykstra, who combines some essential opposites in order to do the work he does, moves with ease from total imagination to practical reality. He put the challenge of creating alien life forms this way: “Because we had to represent ethereal forms, and because I figured lasers were a unique kind of imagery that can be recorded on film because of the narrow band width of color and the ability to stay in focus over an infinite range, we set about using lasers to achieve many of the effects. Primarily, these effects would be the essence of life coming out of people’s bodies, going into other people’s bodies, being collected, being the stuff, the quality, or the treasure that this movie was trying to show as the loss of the human beings and the gain of the aliens. We also had to achieve visuals for the interior of a comet, a comet in the distance, the conventional space travel from Earth to the comet and return to Earth, the lifeforce itself which was transmitted between the unaffected being and the vampire, the lifeforce which was transmitted from unaffected beings to the vampire in its energy state, and the death of a vampire.”

In many ways, post-production was the most challenging portion of the work and perhaps the most rewarding. Dykstra said of the beginning of the final phase: “The decision was made to edit

the film before doing special visual effects post-production, so the wait began. It was going to take about eight months to do the work that we had laid out to do, but as contingencies are always required, we ended up with about four and a half months to complete the work. We set up seven stages at Apogee and began photography.”

Roger Dorney, another of Apogee’s owners and supervisor of optical photography, found that because of the complexity of the shots in *Lifeforce*, he had to use a combination of different matting techniques. Dorney says, “We used blue screen when they shot blue screen on location in England and we shot some blue screen here, transmission blue screen. We also used front-light back light mattes for some of the planets and moons and other units. We used reverse blue screen where that was applicable. We also used a lot of roto. Much of the production footage that was shot had to have other things added to it. The other things were what we call ‘surround’ units and ‘A to B Lifeforce’ units, which are terms we used to identify shots we got on the stages here with our laser and animation work.”

The ‘A to B Lifeforce’ shots were the blue laser shots and the ‘surrounds’ were the shots of the laser light that goes around Railsback and his vampire girlfriend and other objects.

Dorney continues, “Some of the units, because of their convoluted shapes, became difficult to shoot in blue screen or even single phosphor reverse blue screen, so we used the dual phosphor system in which we use a blue phosphor backing in addition to the red phosphor foreground miniature. Through a combination of mattes pulled off each one, we made a matte that worked. It was a combination of techniques. Usually we get locked in to a single technique, but for this film we used almost every technique imaginable. We also made some mattes of some of the A to B and animation pieces and used contrast mattes off those.”

There were 107 optical shots storyboarded for *Lifeforce*, but about 20% of those were doubles—that is, two effects elements per number. So there were actually about 130 ‘optical’ shots in all. Dorney says, “The show wasn’t unusually heavy in visual effects, but we broke some new ground with our use of lasers. We did things I’ve never seen done before.”

Now, in post-production, the interest in reactive lighting has moved to the lasers that are replacing that lighting. Dorney, who retains a guileless enthusiasm for his work and is rated with the best at what he does, went on to say, “We all know that lasers go in straight lines forever, but for *Lifeforce*, we bent laser beams. So, how’s that? The laser lights are incredible the way they are bent and shaped and controlled. They don’t look like anything you’ve ever seen. It doesn’t look like a laser at all. Not to sound corny, but it has almost an organic look. The colors worked well, too. We wanted blue, red, and magenta for the story line and had no trouble at all getting those . . . and, in most cases, they were saturated colors, so pulling mattes was very nice. Also, the look was supposed to be contrasty in these units, so that helped, too. But it was the actual image the laser light gave us that was so nice, so different.”

“We had to figure out what a human soul looks like when it leaves the body,” mused Dykstra. “No mean feat considering I’ve never seen a soul do anything, much less leave the body.”

As it turned out, the image of the soul leaving the body was less difficult to achieve than an image of the interior of Halley’s comet, but Dykstra’s concerns were broader still. “The components that we worked with to provide these storytelling elements had to have some things in common,” he explained. “One, as always, was that it be unlike anything ever seen before; two, it had to have some basis in scientific fact because viewers have become so well educated; and three, it had

to be done with a common enough technique to allow many shots to be achieved within a reasonable period of time and within a reasonable budget.”

Armed with the tools of laser technology, Apogee got down to the business of creating an image that, as Dykstra envisioned it, would elicit from the audience a sense of the ethereal. Dykstra knew what he wanted. “It should be veil-like, translucent, something that you feel is tangible though intangible. It should have a recognizable quality or theme, either a color or shape or movement that will cue the audience when they see it.”

That was the theory, but what was it like in the trenches? “First of all, laser photography is always a little bit funny because the rules are different,” states Mat Beck, who shot laser photography for Apogee. “The multi-pass photography made it more complicated still, and it was difficult because of the nature of the hardware to guarantee that we could ever get back to something we had discovered because often what we were working with was just a reflection from a piece of treated glass held in space.”

Can laser beams really be bent? “Fortune was with us,” Dykstra says, “because a lot of the concepts which were relatively untried turned out to work. Those concepts primarily included ways of manipulating laser light to achieve a three dimensional form in a two dimensional medium that had movement within itself and upon itself and that had a transparency that was ghost-like. So we

refracted lasers, we reflected lasers, we bounced lasers, and we scanned lasers, and as a result we came up with not only graphic images, but images, by virtue of their narrow band width of color, that were unique. And we used them.”

“I’m not certain exactly who came up with the method of rotating tortured mylar on a drum,” Beck comments, “but John Dykstra, Douglas Smith, and his assistant Mark Gredell worked on it originally. John Sullivan did some effects with it, too. Then Maryan Evans and I changed it some. We made it easier to manipulate. Sometimes the drum we were reflecting the laser from would not be dead on center. We had the sense of the light flowing, but it would wander. We had to program it to keep it dead on or the bolt would be moving around in a funny way. However, we wanted the tail of the bolt to stay about right so we had to do a little twiddling on it to make sure it fit. Sometimes we had to do a number of different elements that would be laid on top of one another, some faster, some slower to give it a sense of dimensionality and, also, by different elements moving at different speeds we got interference that would make it more interesting.”

Had cameraman Beck been too long with his lasers? Could anyone understand what he meant about torturing mylar or twiddling the tail of an energy bolt? In fact, a laser language came in to use at Apogee during this busy period of experimentation and effort and terms such as “snakey licks,” “A to B Life-



On set at EMI Studios in London. Nick Maley's robot sits up as everyone takes notice.

force,” “pop tarts,” and “surrounds” seemed perfectly in keeping with the charged atmosphere.

Beck says that at one point, “There was so much laser photography to do that three out of seven stages were producing it.” John Sullivan, with Josh Morton and Bess Wiley as his assistants, was shooting laser photography in a special area on stage two and John Fante, with Eric Peterson assisting him, was shooting lasers in a special area in the model shop near stage three, where Beck and Evans were working.

The ‘point’ that Beck referred to was approximately two months into post-production when Caren Marinoff, Apogee’s production coordinator, had computed enough information to realize the then-present schedule would not meet the deadline. She says of those hectic months, “The deadline was unchangeable. There was nothing to be done but hit it. So we doubled our photographic staff and began rigging up special areas and splitting up stage space. We even took over the large area near the coffee machine.”

It was in the coffee area that D.P. Gregg Hescong, with his assistant Chuck Schuman, began testing flowing granules of anthracite in their search for the perfect comet.

“The schedule for *Life* force was tight, but totally under control,” Marinoff asserted. “John Swallow, who coordinated the effects animation, and I worked closely together. We had our stages in full operation from 8:30 am until 10 and 11 pm, five and six days a week.”

Dorney says of this busy period: “We had six fellows in optical plus the roto department and animation working. Everyone was feeding units through editorial down to us. Jerry Pooler and I were on camera. Paul Bolger, too, at times, as well as being a line-up man. Dennis Dorney and Richard Gilligan were lining up and Alan Spilkoman was helping us in optical.”

Apogee’s animation department is supervised by Harry

Moreau, who was justifiably proud of the quality of the work produced by his staff: Randy Fuller, Olga Craig, Chuck Warren, and Kathleen Quaife.

On stage one, Douglas Smith, with Glenn Campbell assisting him, was shooting the shuttles and other models, the puppets of astronauts, and the very demanding Halley’s comet. Smith says, “It was determined early in the production that the comet would be a yellowish green. That, combined with the fact that comets emit a soft rather than a sharp, contrasty light, made it difficult to make the large size of the alien spacecraft be apparent. There were none of the usual visual clues to help the viewer relate to the scale, no window lights, doorways, or walkways. So every shot had to be treated individually to force, through lighting, extra detail from the model while it was in the presence of comet light. Our gaffer, Lee Pogoler, helped us work through the worst of our lighting problems. With a few minor exceptions, I’m pleased with the results we achieved.”

Roger Dorney recalls some difficult moments, too. “When you’re pulling mattes, roto-scope is the hardest thing to pull out because you’re at the mercy of the guy drawing the line,” Dorney explained. “You can project it like we did in a large format and then hand draw the images, but you’re still at the mercy of where that man sees that line. Also, in this particular show, we had to contend with gross light changes in the background with light values going from a range of six to eight stops. A lot of the frames don’t have any information on them, but the poor guy drawing the line has got to draw a line in there, a frame to draw to. It gets very difficult. If you have a standard evenly lit scene with some kind of contrast to it, you can see the line; but in this movie there were some frames with plenty of contrast, some were dark, some were six stops lighter than the previous frame.”

These were moving, streaking objects, not cartoon animation where you can get away

with no streak.

“*Life* force has seen the best roto work that has ever been done here,” claims Dorney. “We got into a large format and had a very good crew working. The registration was excellent from my standpoint. I get very critical of it because the registration has to be there; the sizing and positioning has to be dead on.”

The roto-scope format that Apogee used was three feet by one and a half feet as a projected image size. An animation stand format is about a third of that. The advantage gained with the larger format is that it cuts down the disparity between lines from frame to frame. Which, as Dorney says, “Gets rid of that hand drawn quality. We had blowing, streaking hair to roto, plus flying objects that smeared by camera. They had to create a line to create a matte from those things. They had to do it right, too. They couldn’t create a hard, sharp line or else we’d have this silly looking thing going by. John Shourt, Michael Griffin, and Dan Hofstedt really deserve some credit.”

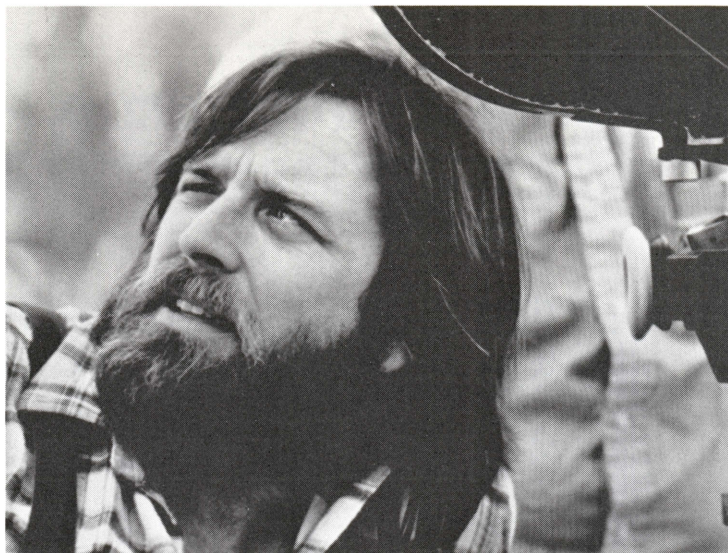
“The laser photography in *Life* force is much better than cell animation,” Tobe Hooper says. “Its webby, tendril-like nature is excellent spirit stuff. It is far more exciting and you don’t know how it’s done.”

“One of the more complicated shots was when the energy bolt blows up a building,” Mat Beck recalls. “It enters the frame from upper right, goes down to the lower left, turns 180 degrees, comes back kind of horizontally along the bottom of the frame, and then up toward the upper right again. I mean, we had the light bouncing off the drum, so we could make it go left to right or right to left, but you don’t make laser light go around 180 degrees. I remember putting my hands around Dykstra’s throat at that point. Anyway, Jonathan Erland made up a rotating cylindrical rear projection screen with a tortured surface from which we bounced laser light onto a mylar mirror that we distorted dynamically. This allowed us to control the light and

make it appear to snake. This was eventually coined as a 'snakey lick.' With all these curved and tortured surfaces we were finally able to make a laser beam go in circles. The roto boys snipped off a few pieces here and there and bingo bongo, we had the laser light doing what we wanted."

"Although the laser provided us with an embarrassment of riches in the realm of imagery," Dykstra admits, "providing on-the-screen cues to size was difficult. We used lasers to create the coma of the comet, which is scientifically defined as a cloud of small particles. That is fog, so we generated the concept that there were magnetic fields of force involved in the interior of this comet. That allowed us to create lines of force and those lines of force were created by refracting the laser light. The movement of those lines of force had to be very subtle because the interior of the comet is huge. That same refractive quality was used later when we made the energy of the individuals being attacked by the vampires. We speeded up the laser for that, making the scale of the refraction smaller. We also added an organic wave to it. Instead of moving in a straight line, it moved in curves like a snake. We tried to achieve a continuity of imagery throughout the film that tied the opening interior of the comet, and the environment in which the aliens lived into the subsequent action of those aliens. So, as you watch the movie, you get a sense of continuity between the lifeforce that was the comet, that ethereal, supernatural (although recorded in normal time) phenomenon, which is a comet and that ethereal, supernatural (although recorded in practical time) phenomenon, which is the death of a human being." ■

Robert Bealmear writes screenplays and articles, produces live theater (most recently, "Penn & Teller, The Bad Boys of Magic") and indie features (most recently, "The Census Taker.")



John Dykstra

Academy and EMMY Award-winning visual effects designer John Dykstra first developed an interest in photography with an eye toward helping to finance his college education. Soon after college, he served as cinematographer on a project sponsored by the National Science Foundation, gaining his first experience with shooting miniatures for a psychological study of responses to various architectural forms. Following this, he worked as industrial designer with Douglas Trumbull on the futuristic "Silent Running," helping to create an early example of visual "realism" which has since come to define the science fiction film genre.

Dykstra next worked for the Ruben H. Fleet Space Theatre in San Diego on a program entitled, "Voyage to the Outer Planets." Following this, he reteamed with Douglas Trumbull to produce amusement park rides and aircraft simulator films, and experiment extensively in three-dimensional filmmaking.

At this time Dykstra became involved with George Lucas on a project which was to radically change the look and nature of filmmaking—*Star Wars*. *Star Wars* contained the

technological advances which continue to set the standard for top-of-the-line special effects, not the least of which was the perfection of the motion control system and the development of the camera which bears its maker's name, the Dykstraflex. It brought him the 1977 Oscar for Best Special Effects.

The next year marked the creation of Apogee, Inc., which brought together nine of the world's top special effects experts. The first project was *Battlestar Galactica*, the most expensive and technologically ambitious television series ever attempted, which was produced by Dykstra. His special effects netted him his first Emmy Award.

Subsequent film projects include *Star Trek*, *The Motion Picture* (for which Dykstra received another Academy Award nomination), *Firefox* and *Outland*. Apogee has also contributed to such films as *The Avalanche Express*, *The Women in Red* and *The Natural*. Today, the company operates from a 30,000-square-foot production facility which offers services in every phase of filmmaking.

Rescher + Figueroa =

SPACE



by Nora Lee

Harry Hamlin with stars reflected in helmet. Rescher used Christmas tree lights poked through a starfield backing. Right: Lunar lander on the moon set. Figueroa had to design a single light source bright enough to represent the sun in zero atmosphere.

The CBS television miniseries *Space*, adapted from James Michener's book, traces the lives of five major characters from 1944 to the 1970's over five episodes and through 13 hours. According to executive producer and co-writer Dick Berg, "It was an insane challenge for television. . . . (but) what we do in *Space* is interpersonal relationships. We spend very little time on hardware, because people are interested in people. This was an adventure story seen through the eyes of the people involved."

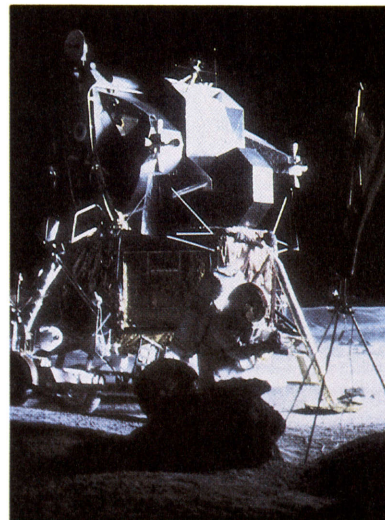
The story behind the story was full of adventure, too.

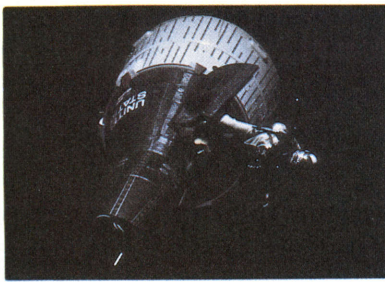
In an unusual departure from standard procedure, this miniseries was divided between two directors - Joe Sargent and

Lee Phillips - and two cinematographers - Hector Figueroa and Gayne Rescher, ASC. Each team attacked the project as it would a feature. That gutsy, theatrical approach was what made this miniseries good television. With the blessings of Dick Berg and little interference from CBS, both cinematographers had an unusual amount of freedom. Still, they kept to a rigorous schedule and averaged about 10 days per hour of air time. Of course for television, that average is a little high. But for a theatrical, it is unbelievable! For cinematography buffs it was an unusual opportunity to observe two very different men at work on the same subject.

Figueroa was teamed with Sargent on episodes one and five. Phillip and Rescher did episodes two, three, and four. The entire shooting schedule was about six months long with the two teams overlapping for only two weeks of work. As soon as episode one was finished, it went into post-production and Sargent and Figueroa went on hiatus until two, three, and four were in the can. Originally, the producers hoped that the two crews could overlap more, but without clones of the principal actors, there was little chance for doubling up.

The miniseries also involved a number of special effects. It would be difficult for a show with the space program as a backdrop to avoid miniatures and matte paintings. Due primarily to the budget, there were fewer effects than originally anticipated. All of them were supervised by Scott Squires who saw the miniseries from a perspective quite different from the two live action crews. He worked with both directors and both cinematographers and a variety of effects houses to assure that individual needs were met and an overall quality maintained.





The interviews in this article were based on viewing only three of the five episodes—8 hours—of the miniseries.

Hector Figueroa: *“Those old guys had lots of tricks up their sleeves.”*

The first episode, which was used primarily to establish the important characters and give them a context, took Hector Figueroa all over England and the United States. The final episode’s action was concentrated on a sound stage at Paramount Studios. In between, were a multitude of challenges, including day-for-night, aging characters 25 to 35 years, and landing a couple of astronauts on the moon.

Parts of England were transformed to represent the various German locations called for early in the story. According to Figueroa, “We tried to think very European when we were shooting, without causing the network any concern.” The network might get concerned if the photographic techniques moved too far away from the accepted parameters of television style. But thinking European for Figueroa meant, among other things, trying to make his pseudo-German locations look different in tone from the English ones. “When we got together to discuss the film we decided that we were going to make the German end a little colder and the English a little warmer.” Thinking European also meant a soft look which had a very practical side to it.

Making people like James Garner, Bruce Dern, Michael York, Blair Brown and Susan Anspach look 15 to 20 years younger than they are and the 10 to 15 years older than they are was a major concern for Figueroa and director Sargent. Their decision to

go with a soft look in episode one helped make the characters’ youth believable. “By soft I mean no lighting instrument was just a hard light,” Figueroa explained. “There was diffusion on the light fixture, as well as on the lens. The lighting instruments had 1000-H 142 Rosco rice paper on them. The light goes through it and diffuses and spatters. Then you photograph your scenes in back light as much as possible – that gives a rim of light to the hair and makes the face look very soft. I also used some very special filters.”

Figueroa feels real tenderness for the golden age of movies. He has made his own efforts to preserve the silkstocking look and he tries to give this style to his television work. “These filters have come to me from the days when I watched James Wong Howe, Elly Fredricks, and Harry Stradling, Sr. I have been in the business 27 years and for 16 of those years I was a grip. I had the opportunity to work with cameramen who developed that whole style of lighting that was flattering to women—the style that made them glamour girls. It goes back to the days at Columbia when Cohn said that he wanted those women to look as beautiful as possible. It wasn’t always easy. You had people like Rosalind Russell that had certain physical characteristics that had to be dealt with – as you do today.

“Scouting around in the days when I was a camera assistant

I found some diffusions – stuff they don’t make today like OBA filters A through E, variable diffusers and nets. I collected what I could and I made a box of filters for ladies (only they aren’t just for ladies). The only ones I haven’t come up with are the variable diffusers. I have Tiffen trying to make me the variable diffusers like they used in the old days. They are very hard to make and it’s like trying to find someone who can tune a Mitchell movement – those guys are gone. So I had a talk with Henry Freulich, ASC. He was in Europe at the time and he brought back some very fine soufflé (?) black nets and clear net.

“Eventually I took a spray can to them. I tried to soften the nets with colors. (I was better at it than anybody, because we go back for ages doing this stuff!) Anyway we call it the Freulich net now. It’s a very soft net for ladies and goes on the front of the lens as close as I can get it to the element. You can even put it at the back of the lens, but it is dangerous. Of course, at a high aperture it won’t be seen.”

“The use of diffusion and filters for close-ups makes it more difficult to keep a consistent look in the film as a whole. The master shots have to be diffused, too. As the camera moves in closer, either more diffusion is added or some is taken away. Otherwise you bounce from a very soft picture to a very clear one.” Figueroa was

Space capsule mock-up. Rescher re-creates space walk and zero gravity situation with the help of Hamlin and a few wires. He did not use high speeds.





On location in England. Figueroa used warmer tones to help make England look like Germany. Kolff is about to surrender to the Americans in this scene. Below: Beau Bridges and Maggie Hahn as Claggett and Rhee.



constantly striving for a continuity in style. "You have to play games with these things in order to get some consistency, because what filters do changes depending on the angle of the sun – from front, back and side light. Front light means you have to go heavier, back light you have to go less and side light depends on the angle of the light and what you want to do with your filters. So to keep it consistent for the editor you have to keep after it."

The other secret to making women look beautiful, he said, is color. "Color plays a very big part when you are doing soft photography for women. You don't hit them with a white light. You either use very light blues or very warm tones. It is amazing how color can soften not only what

they wear, but also their faces."

Figueroa used Fuji film for the whole production. "Fuji film is a little warmer so I used an 85D filter to keep it that way. As the day progressed, I would either leave the color correction up to the lab because it was so slight, or I would use a straight 85 or 85C. I would change the diffusion, too." To complement the Fuji film he chose Panavision cameras for most of the principal photography. "I used the Ultra-Cam and I used Panavision. I also used the 16mm Elaine camera from Panavision and an Arri III for high-speed stuff. In the States I mostly used the Ultra-Cam. I gravitated to Panavision because they have worldwide distribution of all their equipment. My assistant, Bill Winters, went through the lenses so that there

would be some uniformity and for most of the show – even with Panavision – I used Cooke lenses and Zeiss lenses."

Unlike many television cameramen, Figueroa doesn't use the white, hot look. Even though it may be the quickest and simplest set-up, he thinks that it is not especially flattering, and that speed is mainly a matter of being prepared, knowing the subject matter and knowing the director. He has worked with Joe Sargent long enough that he even feels comfortable pre-lighting a set for him. "Joe will find the light on set. If an actor walks into a shadow, that's fine. That's reality. There are shadows in a room and it gives an over all impression of being realistic. Look at the work of Laslo Kovacs or Nestor Almendros and that's what you will see. That is the kind of thing we were trying to do on *Space*."

The scene in which German physicist Deitter Kolff is ordered to Himmler's headquarters was shot on a large estate in England. Kolff (Michael York) and Funkhauser (Wolf von Kahler) arrive as Himmler is unpacking and there is a sense of chaos. The room that is to be Himmler's office is huge and has very high ceilings. When Kolff and the soon-to-be-general enter it they are in the dark. A few steps forward and Kolff's face is lit, but there is a strange shadow across Funkhauser's. The shots are mostly long to medium shots and the room is very hazy with shafts of light coming in the windows.

Commented Figueroa, "It was a joy to work in natural surroundings, big castles. I call them big castles with little rooms. The rooms were little because they had to heat them, but, of course, some rooms were immense. One of them was that one. We lit it all from outside. Most of the windows in England and Ireland are North-faced. That particular room was not facing North but the ambient light that was created by the hillside next to it was wonderful. The sun would hit the green hillside at an angle and the light would bounce right off it and

come up into the room. The English even structured the landscape to enhance the light. They had a wall put in between gardens. That wall was made so that if the light hit it at an angle, it would light the room." In situations like this Figueroa used the source lights to his advantage and enhanced it when he could.

The exit from Himmler's office is just as unexpected for television as the entrance. Funkhauser has been made a general, and to accent his new status and his self-importance the camera goes very low and tight. Figueroa said, "Joe and I talked about this sequence. We were filming something that took place years ago. To do that effectively you try to fit your head into what these people were doing; otherwise they can become comic-book. There is a fine line. So Joe and I wondered when we did that shot if it was one we would get called on. Did it look too comic-book? Was there enough build-up to justify it? Well, we figured there was, so we did it."

Location photography can really tax the ingenuity of a crew. In situation after situation, the best laid plans can go awry. And as expected, *Space* had its problems. Occasionally, though, things work out better than anyone can hope for. Figueroa was especially proud of the day-for-night sequences he shot in a forest in England. The scene is a tense, climatic one. Liesl, Kolff's girlfriend, has bought their freedom, but only by submitting herself to the horrific advances of the general. Here in the forest she gets her revenge and kills Funkhauser. "Normally, in day-for-night the sun becomes the moon and it is usually a three quarter back light. For instance, Gordon Willis likes to shoot between 11 am and 2 pm when the sunlight is straight down. In *Comes A Horseman*, he did all his exteriors day-for-night in the middle of the day. That can work well, but there are other schools of thought. One is to use the sun to your best advantage. Another is to choose an overcast day. The day we shot in the forest it was very gray. So what I did was

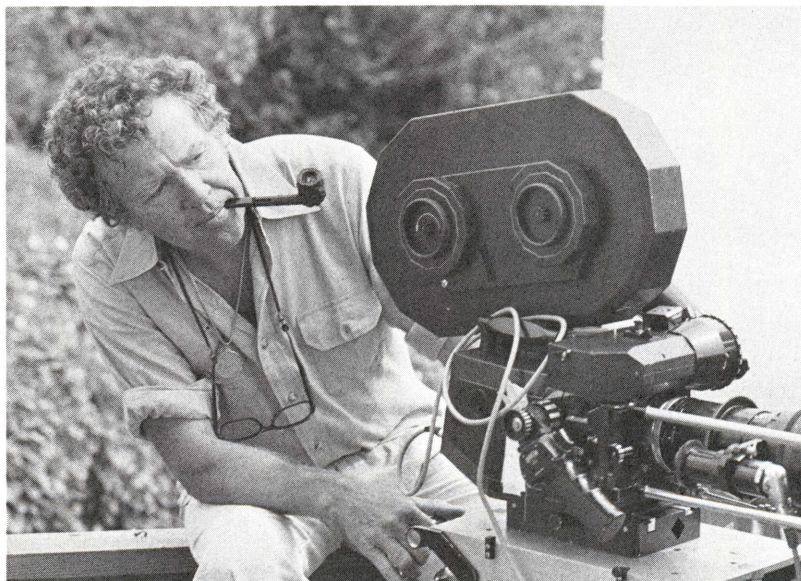
take these AKA MIs and with a 20 by 20 griffon create a very soft, directional moon. I was able to control the light completely because it was an overcast day. I just kept the texture down and as the night progressed from deep night to sunrise I was able to start lightening it up. That was a lot of fun.

"We had two cameras all the time. Joe Sargent loves two cameras. Two cameras are normally a master shot and a tight shot at the same time or a shot that is intermediate. Let's say one is a 24mm lens and one is a 50mm lens. Joe will cross the line, as they say. He will do a camera front proscenium, wide angle and he will do a very erratic angle to emphasize a counterpoint in the story. He doesn't use two cameras just for easy cutting."

One interesting technique used in the first episode was the intercutting of stock footage and Figueroa's footage. Since the year is 1944, the available film was all in black and white. To facilitate the transition from one scene to the next, the new scenes started out in black and white or a kind of sepia and the color came up gradually. The color shift was done by the lab, rather than in the camera, but Figueroa adjusted his lighting to enhance the black and white look. He used a similar technique to ease in and out of the commercials. "First I try to find out what

scene leads into a commercial and what scene leads out. Because what happens is, they make a dupe of those scenes and they sometimes are not very good - especially if I don't give them a good solid negative. Like in the day-for-night, if I gave them a dark negative because I underexposed it, then the dupe would be that much darker and grainier. I always try to be aware of those scenes so I can open up a little. The other thing I do is rim a lot. It's like using black and white techniques. Backlighting, rimlighting, accent lighting, all of that helps dissolves and helps opticals when they lead in and out of commercials. You give it a little more edge and it seems to help."

Episode five was Figueroa's other contribution to *Space*. Cinematographically, the most important sequences take place on the surface of the moon. It is in this episode that astronauts Pope, Clagget and Perry are sent to the moon's dark side. To create the illusion of being on the moon, a full scale set, a full scale rover and a full scale LEM were constructed. The basic problems were a combination of getting the astronauts to look like they were moving in Moon gravity, creating a single light source and hiding the five cameras from the giveaway reflections in the helmets. "There were times where we had three cameras going at once, but you never saw



Rescher checks camera angle.



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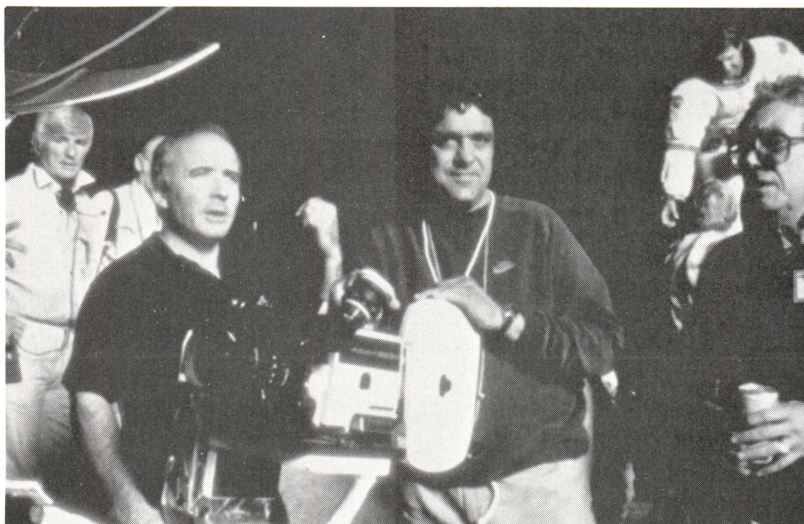
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them. The moon set with the lunar lander and the rover had cameras all looking at each other. That whole thing was done without wires. No less than three cameras were always on. All of them were tied in for video viewing. Joe loves video viewing. We had up to eight monitors, two of them with slow motion capabilities. Precision Video and a good friend of mine, Phil Silvers, devised a system where he could take the image we had on film into video tape and immediately slow it down." He used this capability to help pinpoint the correct camera speeds necessary to give a lumbering sort of feeling to the actors' movements. "We didn't have to worry about dailies. We knew what it was going to look like - at least in the sense of motion.

"The moon set had to have one light source. How could we get a single source bright enough to light an entire set? We wound up directing light through a tube or a snood that was white foam-core on the inside and then through an intensifier (146 paper). I had the lab print the shot a little blue to give it that cold look. I used 24 maxi-brutes with some mirrors and a mixture of tungsten and blue to give it an edge. The set was 160 ft by 90 ft and when you looked at it with the light meter the reading was the same from 15 ft from the light source to the back wall. Lighting on the moon is different from Earth. You think of

a frontlight/backlight situation as having a certain look. On the moon it is reversed. There is no atmosphere, no reflection and very little depth. Things that are hundreds of feet away look close up. The sun is huge and Dick Gordon, former astronaut and our technical advisor, told me it looks like it is so close you could reach up and touch it and burn your hand on it."

Because the helmets reflected more than 180 degrees, the set had to be draped in black on every side and on the ceiling. There could be no extra lights and seemingly no place for the camera. "We used three remote-controlled cameras on the moonscape. One camera was actually on the rover. My operator was in the rover dressed as an astronaut. He used a little Elaine 16mm camera and he could make it zoom, focus, pan and tilt very unobtrusively. Another camera was on the Louma crane and it was remote. The last camera was on the side and it was a tripod-mounted camera dressed out to look like a NASA camera." Figueroa laughed, "Each camera would photograph the other cameras and it looked very natural."

Figueroa praised his crew, both the English one and the American one. Their speed and efficiency and ability to take part as team players made this shoot one of his most enjoyable. But he offered one final bit of wisdom on the subject of shooting *Space* or any production, "There are three

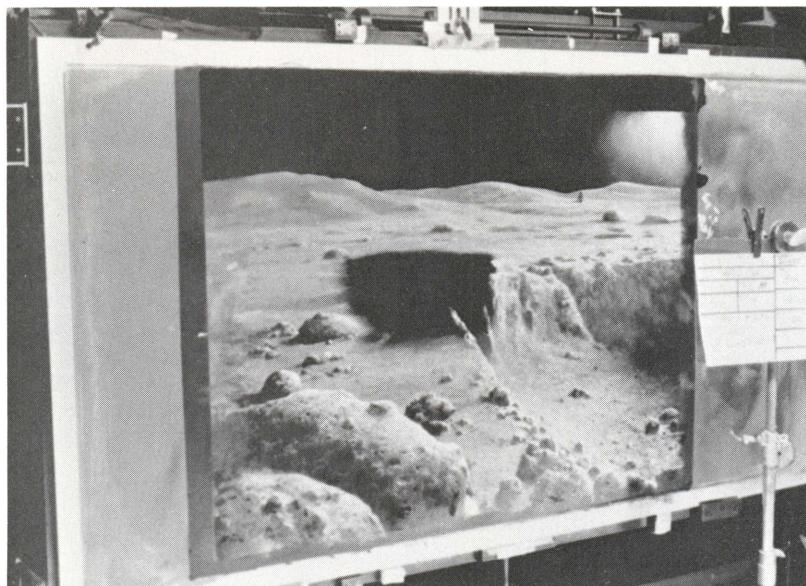
important things – the camera-man's eye, the film and the man at the lab. It's important to work with the guy who is going to work on the Hazeltine. He is working in a dark little hole and nobody ever goes by to say 'Hi.' They are the ones who get your film right out of the developer and all they have to go by are numbers. If you can talk to them, give them an idea of what you're after, they are your best friends." With a project of this scope, friends were very necessary.

Gayne Rescher, ASC: "Obviously, we don't have a binary system."

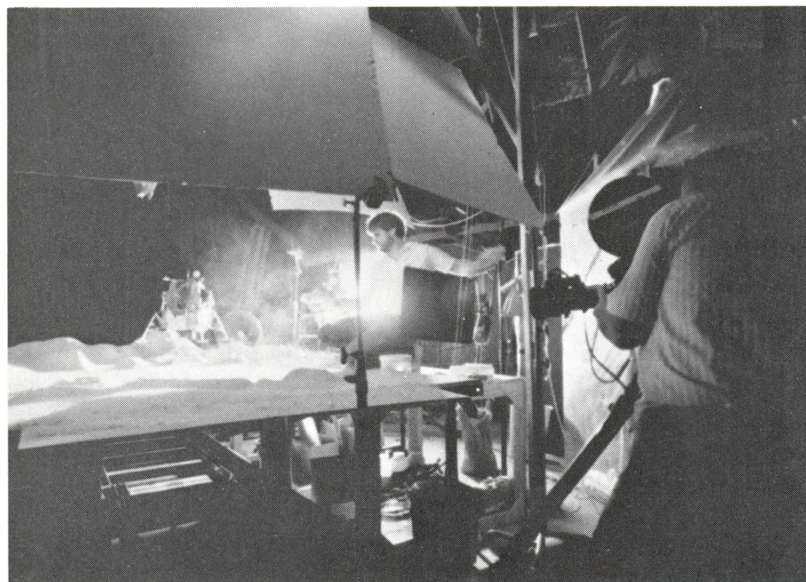
Gayne Rescher had as many challenges as Figueroa, with one additional. Since he was shooting the middle episodes of the miniseries, he had to make some concessions to what had gone before. For instance, he continued using Fuji film and Panavision cameras, but did he make any artistic concessions? "It wasn't difficult to take up where Figueroa left off; I really didn't see it as a problem. Hector and I talked about what we were going to do and the directors talked about what they were going to do. But I was not going to try to shoot it like Hector, and Hector was not going to try to shoot it like I would. So there are bound to be differences. Neither one of us did anything in the other's segment. So, if they don't match exactly, I don't think anybody is going to notice."

Rescher's cinematography took him across the country and in and out of three different decades for episodes two, three and four. He shot in as many or more locations as Figueroa, continued the aging process in the actors, and recreated man walking in space. In a telephone interview from his hotel room in Dallas, he reflected on the most immediate of the problems – aging the actors. "Actually, there was some considerable help from make-up. The main thing they were able to do for the actors when they were supposed to be young was help eliminate the sag in the faces. That

Mike Bigelow



Mike Bigelow



helped, but proper lighting was the biggest thing.

"When the actors were supposed to be young, I would hit them very much in the front with a high key light and that would take out any wrinkles. It just whites everything out. Then as they got older, I would bring the light quite severely around to the side and emphasize the lines in the faces. One of the big successes I had was with Blair Brown. She looks so different from the young Blair Brown to 25 years later!" Rescher's success, he feels, was based on a combination of the limited use of fil-

ters and diffusion on the lens for the younger sequences, and his lighting. "However, it was principally lighting. You can only go so far with filters and it starts looking very fuzzy. I hate cutting from a fuzzy close-up into a sharp shot. If you are going to have that style you have to use it all the way through."

Rescher found that, in some ways, each actor had to be dealt with individually. "I found that as long as you kept a high key light on James Garner, which shadowed him under the chin, he looked remarkably good."

Dream Quest Images artists Gioffre and Sullivan did matte paintings to give depth to the lunar set. Below: Scott Beattie and Bob Thomas land the lunar lander on the moon's surface, with the help of a miniature moonscape, model and air jets.

Page opposite Figueroa, right, and director Joe Sargent on the lunar set.

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To help set the mood and the time period, Rescher changed the color of the episodes. "Lee Phillips, my director, wanted more of a period look in the early part of the picture. We had quite a few discussions about it because I was concerned that it would be too radical a change from Hector's work to what I was going to do. But Lee was insistent on it. So I made some tests using a sepia filter. Well, I showed them to Lee and he loved them. I was still concerned so I made some more tests and I went to the lab and had them print the sepia filter out. In other words, I had the lab try to subtract it. Then I did a shot without the sepia filter and had the lab try to add it. It was just an experiment to find out if in post-production they could either take Hector's first segment and add the sepia tone or take it out of my segments. That way, we were not totally committed to a kind of mismatch."

Both lab procedures produced good results. "It wasn't exactly the same look, but it worked reasonably well. I used the sepia tone through the early part of the show and at a certain scene I began to lighten it. Finally, I phased it out as we got closer to the present day. I had to phase it out before we did the space walk because I couldn't see the space walk in sepia. It looked very good, but it caused some concern with the network until I assured them that they could still go any way they wanted with the negative."

In every episode, *Space* executive producer Dick Berg took advantage of the available footage from the time period and cut it into the show. Much of it was gathered before principal photography began, some of it was discovered during shooting and some of it was never found. The idea was to put fictional characters into an historical context. It worked exceptionally well in the Gemini sequences in Rescher's episode four. "In some cases, things were planned well enough that we could actually work to match the stock footage," recalled Rescher. "In pre-production I saw

certain footage that they were going to use in the picture. Where I could, I tried to work into it. I took notes on the direction of the sun and other lighting conditions and used that information when I was shooting."

From the historical context, the episodes plunge into the intimate lives of the various players. In one of the most moving moments of the entire mini-series, Stanley Mott (Bruce Dern) comes to grips with his son's choice of an alternate lifestyle. The scenes were shot in and around a beach house full of large picture windows. The extremely bright sand and the water just outside called for some careful planning. "I saw the beach house in one of the numerous scouting trips we did. I planned how to shoot it when I saw it. It was obvious that because of the beach outside, it was going to be hot (bright). When you go to a location you don't want to burn up the exterior. It's about the only really good thing you have going for you." His lighting was set up so that the audience could clearly see people on the beach outside the house.

"So, I lit mostly with source light and made the most of the fact that the outside would be much brighter than the inside. People were darker on the inside. The trick was not to have them so dark you couldn't see them," continued Rescher. "I covered the windows with Rosco scrim. All the key lights were on the outside, and every place on the outside that had mullions or some place we could hide them, we had HMIs. Then on the inside we just bounced more HMIs off the ceiling. We had to bounce them off the ceiling or they would have reflected in the glass. That was our fill light. It was a very simple setup but it takes a lot of firepower."

"There was a nice shot of Bruce Dern with his head back where there was actual sunlight hitting him. It was late in the day so I just cheated his chair a bit to get it in the sunlight. If that looked natural, it's because it was."

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Probably one of the most difficult things to film successfully is two people making love. Cameramen often have to go to absurd lengths to keep their subjects from looking silly. After all, in real life few lovers play to a camera. In *Space*, Cindy Rhee (Maggie Hahn) and Claggett (Beau Bridges) get their chance on the beach near a small campfire. The lovers, especially Hahn, glow in a very romantic amber light. Rescher describes the circumstances, "You are trying to shoot two people who are making love and it is difficult to put them in some kind of position so that you can see them, but doesn't look awkward. We went through a lot of takes because Maggie just could not bend her head in a way so that she could be seen. Any way she put her head she didn't look gorgeous, she looked terrible. So we finally had to dig a hole in the back, out of the shot, so she could slope her body down and get her neck up enough."

Rescher and Phillips made the most of the amber firelight. "I had a tiny light buried right at the fire that had a little amber gel on it," said Rescher. "We also had a little gimmick that made it flicker. Then I mixed in more amber light to make it look natural. I also had a kicker from behind with a quarter blue gel on it."

The choice of film stock helped enhance the soft, glowing colors in this scene and others. Film stock is as important a tool as the right gel or the right lens. "I like the Fuji film; I like Eastman, too. Hector wanted to use Fuji and I certainly had no objection. I like it because it's a little softer and colors are not as saturated. I don't like it for everything. I am making a very rough picture here in Dallas, (*Right to Kill*, ABC) and I need the hard edge of Eastman."

The right tools are very important to any job, but part of the charm of being a director of photography is running into a situation for which there are no "right" tools or "wrong" ones either. Making a man "walk" in space without ever leaving the

sound stage is just such a situation. It presented a multitude of problems and they haunted Rescher up to the very day of the shoot. "I worried about the spacewalk all through the shooting, before we ever got to it. There was no time for me to do any tests because the stage wasn't ready until right before we shot. Besides, we were shooting all the time anyway. Since I couldn't be there, I had a cameraman do a test which I developed. From the test, it was obvious that the biggest problem was the wires that the astronaut had to hang from. The second biggest worry was the fact that they wore totally round helmets that had gold visors which reflected everything in the studio. Lights were another thing. I studied a lot of spacewalk footage, particularly spacewalk stills, and in most of them you will see the reflection of the sun in the helmet - a bright kick in the helmet. I figured that's fine, but there can only be one, not two or three. Obviously we do not have a binary system. Almost any place I put a light it would reflect in the helmet unless it was directly behind."

Rescher had an impressive list of worries. He thought of a dozen different ways to solve them. "Before we shot, I had a cut-off of the spacecraft prepared, because I figured that if you saw the spacecraft reflected in the helmet, that would be perfectly natural. I decided I could put a little fill in my picture by projecting light on the image of the capsule. It turned out that I never used it because I couldn't get the shot that it would work in. The spacecraft was always behind the astronaut. Though I never actually used it, I think it was a good idea. I had another cut-out of the earth that I intended to use, too."

Re-creating a space walk is difficult because in space the sun is the source light. There is no atmosphere to diffuse the light. There is no such thing as ambient light. There are no multiple shadows. There are nothing but lighting problems for the cinematographer. "We were intending to

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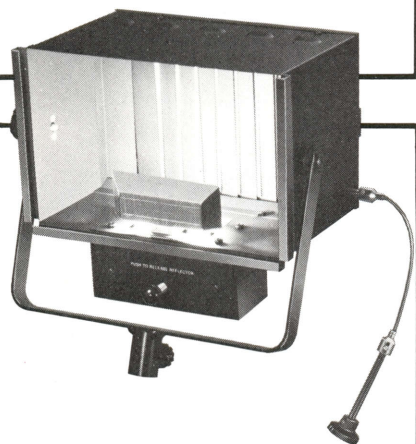
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shoot the astronaut in slow motion which means I would need quite a bit of light. I ordered a 1200 HMI and tried that out. It had some problems. It didn't flood enough – I had to cover the entire space walk with just one light – and I couldn't patch in another light or get it back far enough. Because the helmet is round, all the images reflected in it are very small. The image coming from the HMI did not look natural. It was a tiny dot and it looked too small for the sun.

"To try to get the size right, I had an enormous wooden cut-out built with a ten-foot circle in it and we covered the center of it with tracing paper. We put maxibrutes behind it – I forget how many, but we had them everywhere there was space for them – probably 9 or 10 – and hit them into the tracing paper. When that was reflected in the helmet, it looked very much like the sun and it spread out enough that I could cover the entire set with one light. The key to the lighting was some added back light for the reverse angle of the astronaut, as though it was reflecting from the earth."

The wires were the final major problem. "I was getting a little desperate about that by the day of shooting. Originally, they were transparent and that didn't work. Then I had them painted a dull black and that didn't work. I was trying everything I could think of. Finally, I put a polaroid filter on – a polar screen – and they disappeared."

The filter solved one problem and created another. "The polar screen took a stop and half away from me. Another fortunate thing happened to me, though. Harry Hamlin, who was doing the walk, happened to be very good at simulating a slow motion effect – a floating effect. He was so good at it that we decided not to shoot it in slow motion and that gave me back my stop and a half. He simulated that whole thing." The most pleasing shot in the space walk sequence is Hamlin floating with the earth behind him.

Rather than adding the earth optically, it was rear-projected by Bill Hansard's team.

Another sequence shows Hamlin's face in close-up. He lifts his gold visor and on the clear vision underneath, we see reflected stars. "That was a shot that Lee Phillips and I talked about, and everybody tried to talk us out of it. They said it couldn't be done," continued Rescher. "That is just another way of encouraging us. I had them find a star plate for the rear projection. Hamlin was photographed against the star plate. Now, very close into him – about three feet from his face – was a canvas star backing. It was one that you project the light in the back of it and it has little holes in it. For the camera, I cut a hole in the backing and stuck the lens through.

"I found that with the curve of the helmet the stars looked too tiny. So I took a pencil and started punching bigger stars in the canvas. Pretty soon everybody was punching holes in the drop. I got it the way I wanted it and Lee looked at it and he said that the reflected stars were fine, but they were all the same color. My gaffer always carries a string of those tiny white Christmas tree lights. So we hung those around the backing and then dimmed them a little to change the color slightly. Finally, it started looking very good and we shot it."

Space is visually appealing because the creative team made no concessions to the fact that they were shooting for television. "None whatsoever," Rescher added emphatically. "And I was quite amazed that we were allowed to do this. We never once had any pressures from the network or Dick Berg. You may have noticed that we had a lot of wide shots. We very often had enormous interiors. We would play an entire scene wide with the actor very tiny. You could just hear his voice. Usually we have to have close-ups, but we never had any complaints. Lee would come to me and say, 'Well, this is what I would like. Can you do it?' I

would say, 'Yes, I can do anything, but it will take me about an hour and a half.' Invariably he would tell me to take it. The assistant director would wring his hands, but we didn't make many concessions.

"The main concession was in choice of location. Often, for some of the less important scenes, a location was used because it was close to the main location, not because it was ideal for the scene. That kind of thing has to happen in all television. You just try to win the important battles."

Scott Squires - "We rented the same earth."

For a thirteen-hour miniseries based on the development of the space program, *Space* had very few special effects. Most of what was done was handled by Dream Quest Images. Scott Squires, president of Dream Quest at the time, came on the project originally as a consultant. During pre-production, he helped analyze the need for effects, the relative costs and the alternatives. Sometimes there were alternatives to miniature shots. "They wound up doing some of the major plane sequences live. It is always better to do that sort of thing live if the planes are available and the weather is with you," said Squires.

When the final decisions were made regarding special effects, the producers chose Dream Quest to handle most of them, in part, because it is a complete effects facility. Most of the effects shots were confined to episodes one, four, and five. Freeze Frame was responsible for most of the opticals and titles were done by Dan Curry and Modern Film Effects. The models used were built by Brick Price Movie Miniatures.

"In episode one we contributed two matte paintings and the shots of earth for the opening," recalled Squires. "We supplied the elements of the earth shot to Modern Film Effects because they were already doing the titles and our optical department was pretty booked up at the time.

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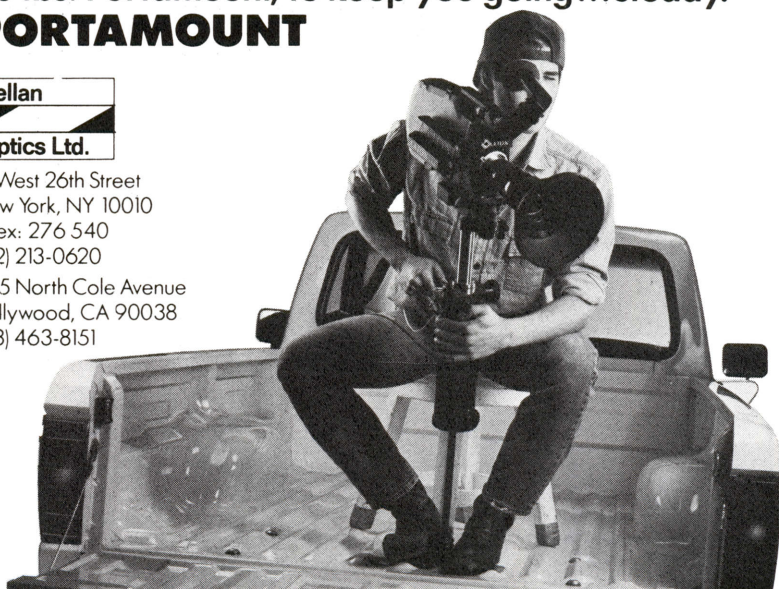
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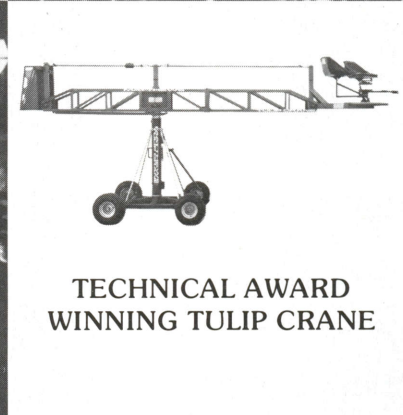
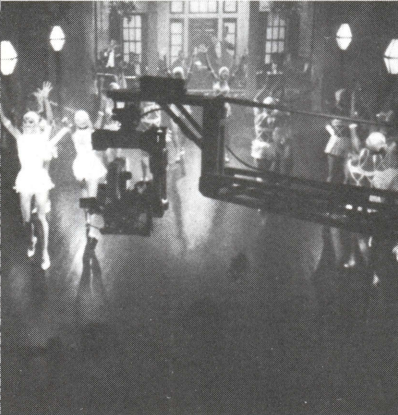
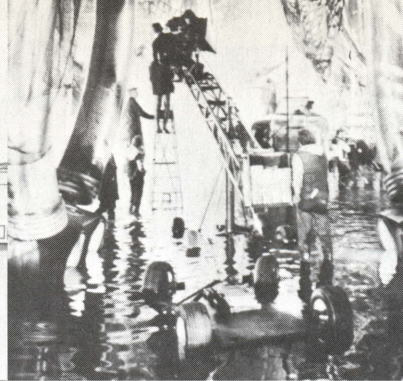
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"One of the matte paintings was a shot of Peenemunde across the bay before the bombing and one was a shot of it after the bombing." Peenemunde was the island where German scientists were trying to perfect rocketry. "You see a lot of smoke coming out of the ruins in the second one. Rocco Gioffre and Mark Sullivan did the paintings and Fred Iguchi shot them. The live-action elements of these two matte paintings were shot in England, and unfortunately they had the boat go through the matte line, which made it difficult to blend the blue sky."

The biggest challenge for Dream Quest was in episodes four and five, just as it was for Figueroa and Rescher. The Gemini missions and the Apollo missions were well documented by NASA. "One of the big discussions throughout was how much of that stock footage should be used? How much real footage? How do you integrate them to make them look the same? Were they going to go for a documentary style or more of a theatrical style? It was decided to make it somewhat more theatrical.

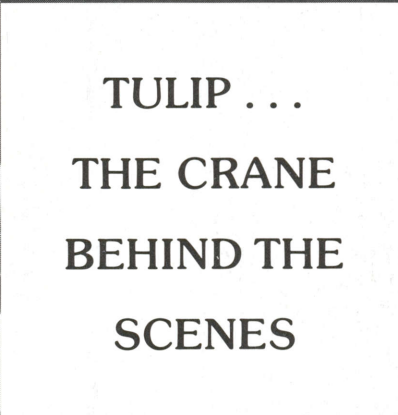
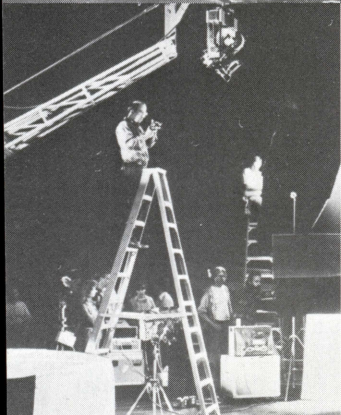
"We did three shots in the Gemini sequence. There was a shot of the Gemini orbiting the earth with the Agena in the distance. Later on we see the docking. We start off on a window of the capsule and pull back and we see Pope (Harry Hamlin) in the capsule and we keep pulling back until we see the Gemini and the Agena orbiting the earth together. Finally there's a shot of just the Gemini orbiting the earth."

For the shot with Pope in it, a number of methods for inserting him into the miniature were discussed: rear-projecting some footage, matting Pope in and doing a matched move on the animation stand or the optical printer, and using a cut-out. This particular shot was one of Dick Berg's favorites. He good humorously admitted he was not sure how it was done and was too embarrassed to ask. Squires explains, "When I discussed it with Lee

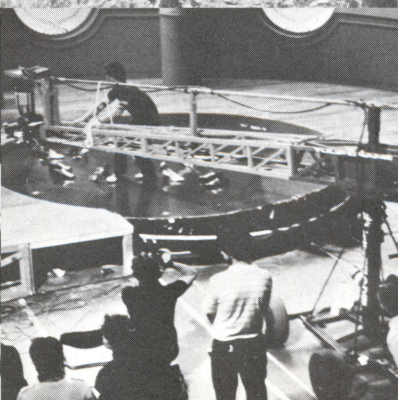
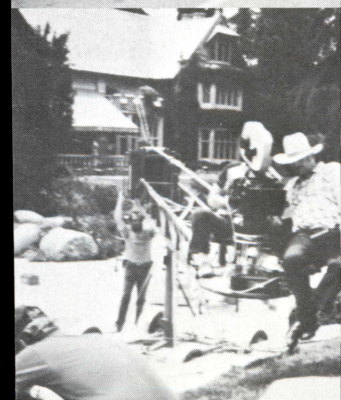


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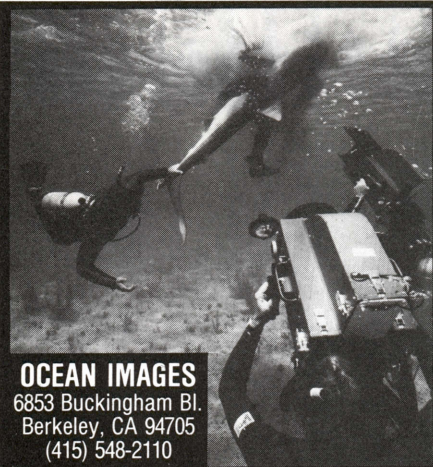


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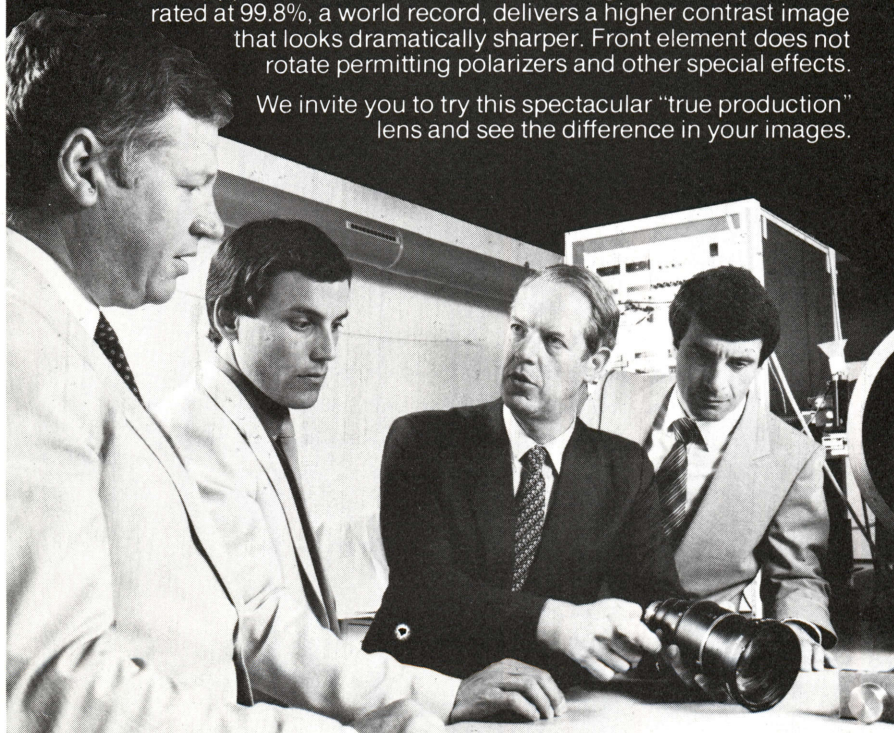
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Phillips, they were going to have Pope sleeping. He wouldn't be moving, so it didn't make much sense to shoot a motion picture plate of him and project it. So, we wound up shooting a 2 1/4 still when they were actually in the full-scale mock-up capsule.

"It was rigged into the capsule by Brick Price Movie Miniatures. The slide was inserted within the Gemini capsule and backlit. Having the two elements together from the beginning made everything much easier because it all tracked together no matter what we did.

"We shot it as two different passes to get the lighting correct, but with our motion control system, that was no problem. The slide was also indented from half-an-inch to an inch behind the window itself so that gave some form of perspective to it. Brick actually put in a plastic window and if you watch it as the camera moves there is a slight sheen across the window which actually helps the illusion of someone being inside." The part of the shot that made it really dramatic was the camera move. With Pope in the capsule, the camera starts out very tight on him and begins a slow pull back until the whole galactic landscape is revealed!

"Celestial Mechanics had shot a dimensional earth for the space walk. It was rear-projected by Bill Hansard and Rich Hemler rigged up the astronaut, Pope, to float across the rear projection screen. Since they had already used that particular earth, rented from Graphic Films, we rented the same earth for our Gemini shots. We softened it a bit and for one shot we had a shadow gag moving across it.

"For another shot we actually did our effect on stage. There is a glow around the Earth and we backwound the film and shot it in a separate pass on stage. Looking back on it, it probably would have been better to have shot it as a separate element, just so opticals could have some control of it. Once the composite was done the director wanted a little

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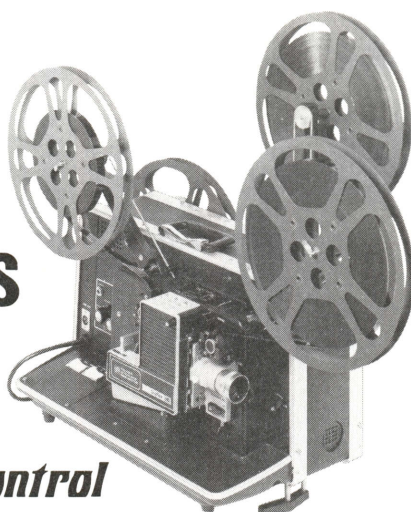
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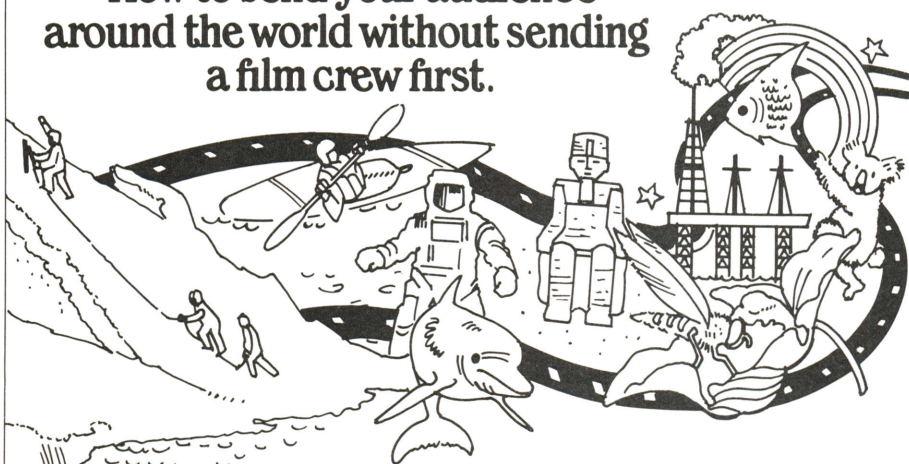
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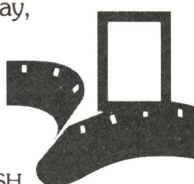
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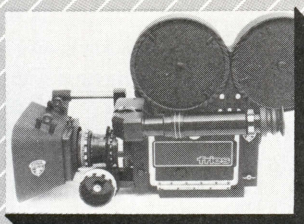
more glow or a little less glow. If it had been a separate element then it would have been easier to manipulate."

Flexibility was the key word in episode five. The actual moon walk was done live-action, but not without the help of Squires and company. "One of the original ideas for shooting episode five's moon walk included using Introvision, and it looked like a viable alternative. But the decisions on how to do the effects were being made last May and there were still a lot of questions about how the director wanted to shoot the moon landing and the rover expedition. Joe Sargent is the type of director who likes flexibility. So it was decided to build a full scale set and to augment the set with matte paintings to allow a larger scope on the scene. On Stage 16 at Paramount they constructed this huge moon set."

It would have been very difficult and extremely expensive to build a moonscape that was large enough to give the necessary feeling of vastness without encountering depth of field problems. It was a natural place to use matte paintings. "Dream Quest shot several plates for matte paintings with the idea of using one painting for several different scenes," continued Squires. "They set us up on parallels with the main cameras and while we were still there the main unit would shoot other scenes from this same vantage point that might come later in the sequence. For example, we might see the LEM in the distance, then we might see the rover coming towards us and then we might see the rover going away — three different cuts. Our one matte painting was good for three shots. I think it worked well and it was economical.

"We ended up with four paintings for that sequence on the moon. The paintings themselves were difficult because the moon surface is very smooth for the most part and it is hard to blend two smooth surfaces. You have to match the tones and the colors just right.

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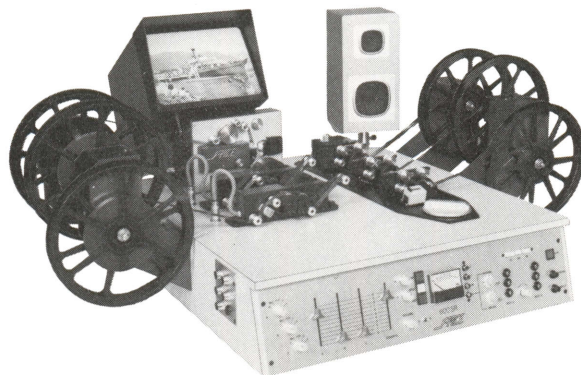
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"Before we actually got to the surface of the moon, there was one long shot of the LEM coming down to the surface and that was shot motion control. The moon down below was a 12 by 14 moonscape miniature and we did a camera move on it as well to match what the LEM was doing. Hoyt Yeatman was the director of photography for this. We actually manually lowered the LEM down and shot it at several different high speeds. We also saw moon dust swirling up. On a short linear model mover out of frame a pipe was rigged up and we moved it by hand up and down about two or three feet and blew air through it." It is unfortunate that NASA could not land men on the moon with the same highly predictable results and for the same price.

Mini-series have become the hottest ticket in television in recent years. For the most part, they do very well in the ratings and they offer a bit more substance than normal TV fare. Technically and artistically they seem to represent television at its best. The budget for *Space* was rumored to be around \$30 million. That is an average of about \$2.5 million per hour of running time. It is not unusual these days for a feature film to cost \$30 million. That is an average of \$2.5 million for every ten minutes of screen time.

A familiar cry in the movie industry is that the golden era is over. "In the good old days," the lament begins, "the studios turned out hundreds of pictures a year. Now each one does two or three." Perhaps those days are not really over. Perhaps they have just moved to a smaller screen. ■

Nora Lee is a free lance writer who is a publicist, writer/researcher, and former model-maker and production assistant. Her articles have appeared in three languages around the world.

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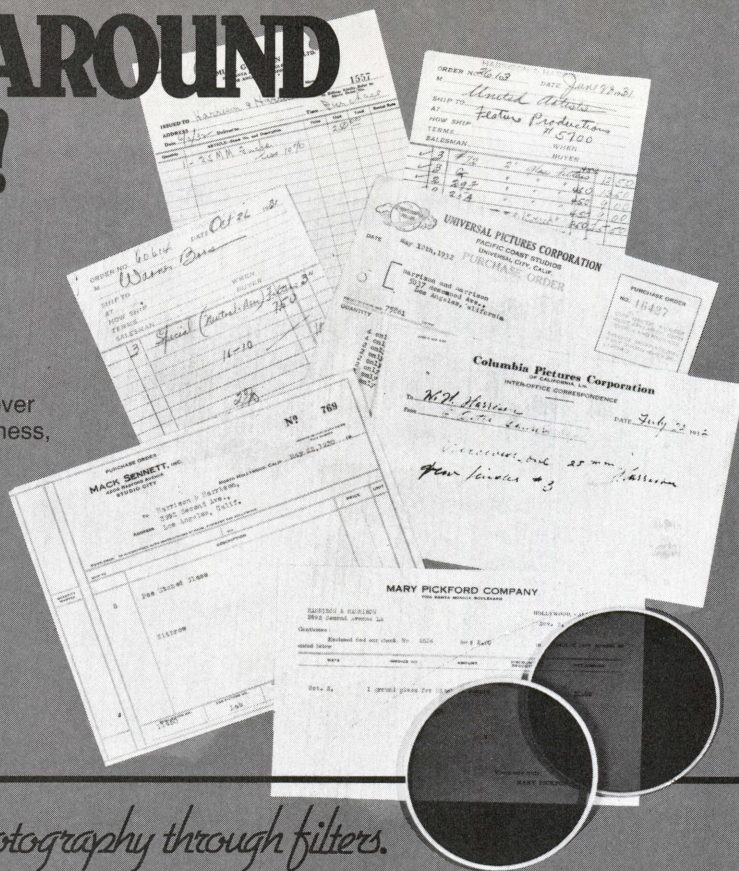
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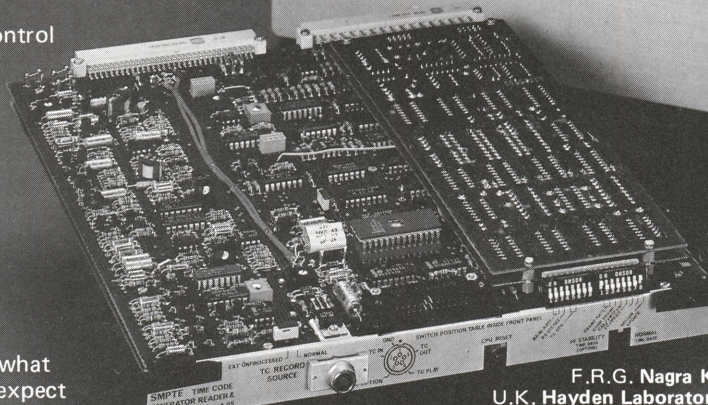
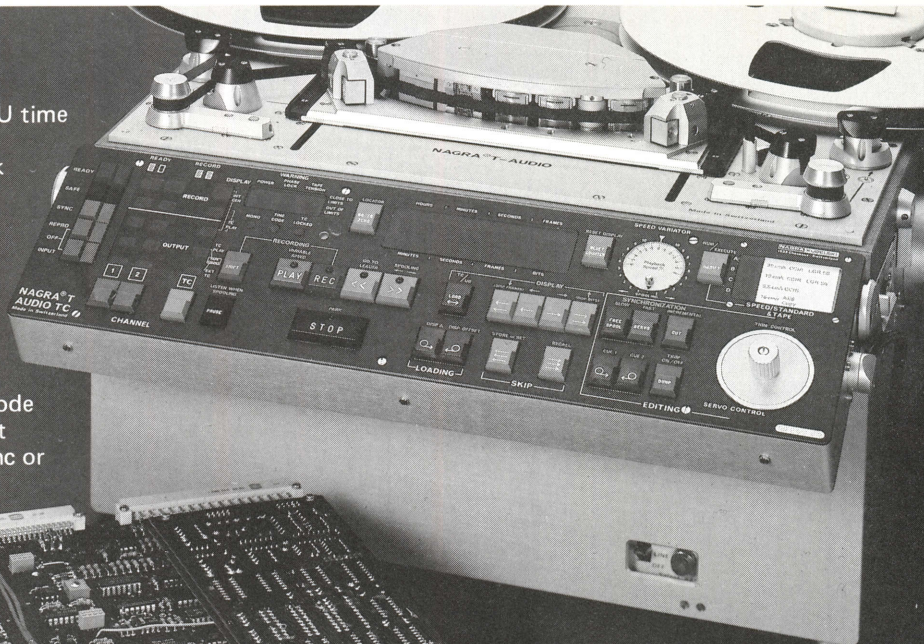
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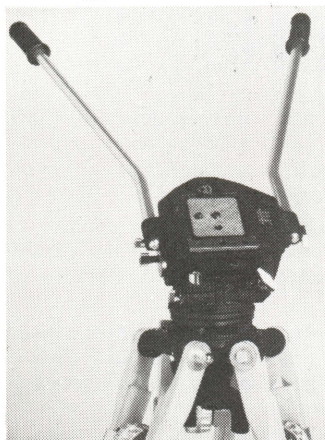
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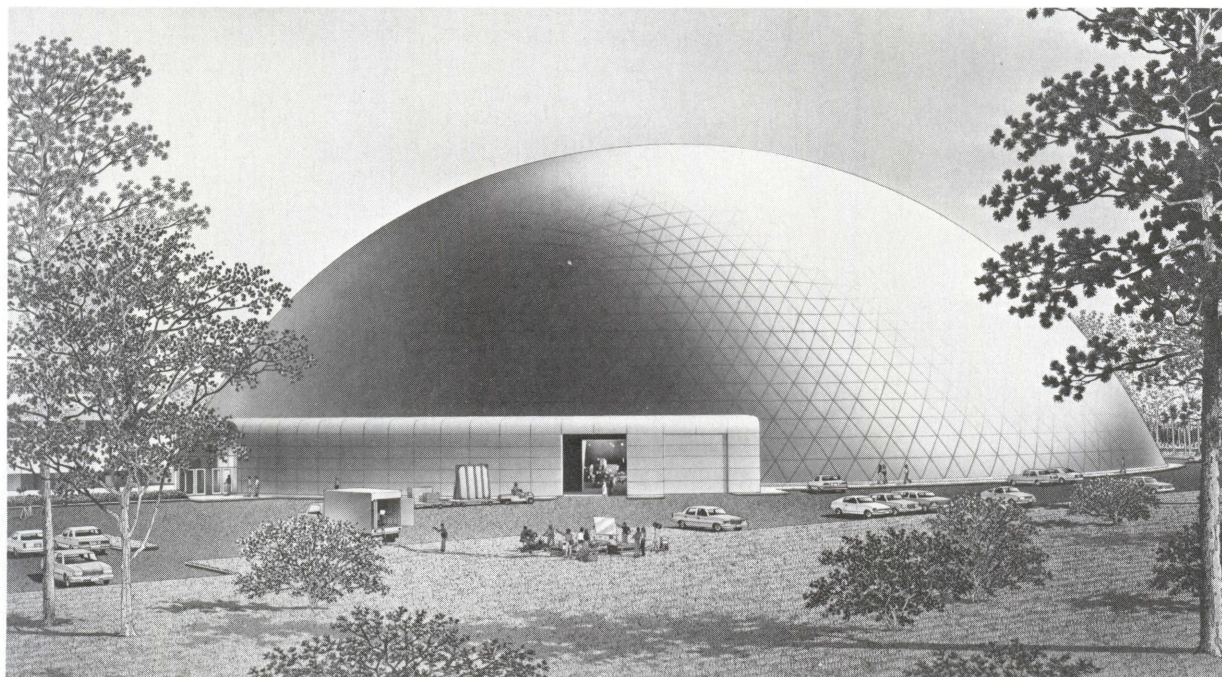
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Futuronics on the Horizon



Artist's conception of the Kamrick/Cinergy Futuronics studio, now under construction in Texas.

Below: At groundbreaking ceremonies were John B. Turner Jr., president of Friendswood Development Co.; John Eppolito, Anna Belle Baker; Randall Meyer, president of Exxon Corp.; Houston Mayor Kathryn J. Whitmire; Kenneth Schnitzer, chairman of Century Development Corp.; Chris Clements, and Wally Gentleman.

by George Turner

The Kamric/Cinergy Futuronics Studio, which will supplant the great "007" stage at Pinewood Studios in London as the largest sound stage in the world, is now under construction near Houston, Texas. Size is not the only distinguishing feature of the studio, which will offer a bold new concept in motion picture production methods.

Ground breaking ceremonies were held last October 11 at Kingwood, a heavily forested area 22 miles north of Houston. The complex is scheduled to be completed and in operation by late 1985 or early 1986.

The sound stage itself will be housed in an all-aluminum geodesic dome 135 feet high with a base diameter of about 435 feet. The entire dome-covered area will cover about 140,000 square feet—3.2 acres, making it the largest aluminum clear-span dome in the world. It was designed by Aeschbacher Chambers Architects and

is being fabricated by Temcor, of Torrance, California, which has installed more than 700 domes throughout the world. Temcor's largest structure to date is the aluminum dome which houses the Howard Hughes "Spruce Goose" at Long Beach.

Nine adjacent areas have been set aside for administrative buildings and an additional 15 acres are reserved for auxiliary businesses such as camera firms, lighting companies and film processing facilities.

Phase one of the operation is budgeted at about \$30 million. Three companies have joined in the venture: Kamric Investments, based in Denver; Cinergy Corporation, of Houston, and the Futuronics Corporation of Los Angeles. Project managers are the brother and sister team of Chris Clements and Anna Belle Baker, president and vice-president, respectively, of Cinergy. Both have worked in various areas of the

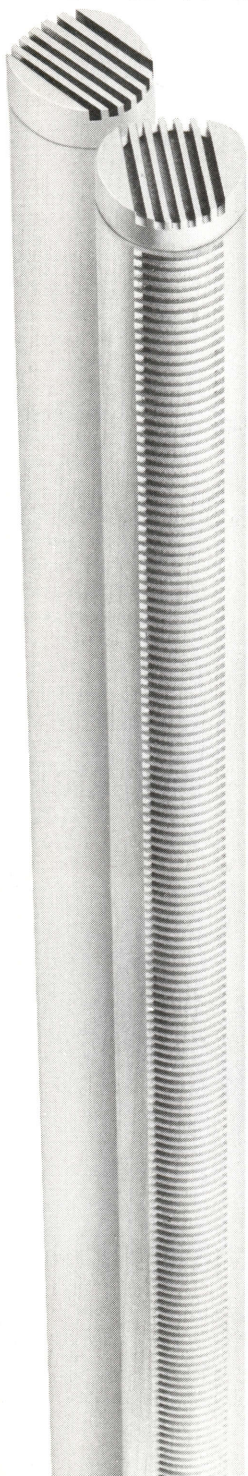


entertainment field as well as business and law.

The most unusual aspect of the studio is the process projection system designed by Futuronics partners John Eppolito and Wally Gentleman, CSC, BSC. Eppolito's special effects inventions in association with Les Robley at Stonehorse Productions in Hollywood were subsequently used in such films

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as *Outland*, *The Incredible Shrinking Woman*, and *Inside the Third Reich*. Gentleman worked at Pinewood on such classics as *Great Expectations*, *Oliver Twist* and *The Red Shoes*, and was special effects director for numerous films including *2001: A Space Odyssey*, *Infinite Horizons* and *One From the Heart*.

"The dome is designed to accommodate a rich variety of process projection throws from freely accessible multi-positional points about the dome," Gentleman revealed. "From an interior spine a giant front projection screen will be floated and eased into position by motorized controls for fast repositioning of the screen and set elements. The Futuronics process will effectively bridge the studio-versus-location motion pictures production dichotomy. It provides a substitute for location cinematography and eliminates the need for studio backlot construction. It provides on-the-spot, in-camera visual effects at a substantial reduction in cost when compared to conventional systems of traveling matte, blue-screen operations."

Eppolito believes that "the use of Futuronics can cut film productions costs by up to 30 per cent through the elimination of expensive set and location shots." He described Futuronics, which he and Gentleman developed over a period of several years, as a "live-action, three-dimensional, laser-generated matting system much more advanced than previous methods. Live actors can be inserted into a scene that exists only inside the camera. The actor can walk 'through' a scene, 'in front' of it, or 'behind' it. The actors or objects filmed in the studio are superimposed onto location footage." It would be feasible, he noted, "to gallop a horse around the perimeter and photograph it for as long as you wished with a continuously changing background."

Gentleman pointed out the versatility of the system. "There are over a dozen new productions that would use the new studios if they were ready. All the *Superman* films could have been done here. We've got a range of technology that Hollywood has not. When I was talking to Stanley Kubrick in London, he told me that he thought Futuronics was the greatest revolution in filmmaking since sound."

Among the features incorporated in the stage, which was designed principally by Gentleman, is the world's largest underwater filming facility, an eight-foot-deep water tank measuring approximately 350 feet by 200 feet, which is set in the foundation underneath a movable stage.

The dome is capable of being divided into three sound stages, one of which can be converted into three smaller stages for productions requiring less space. During peak production times, five stages could be operating simultaneously.

An advisory committee for the studio consists of Lyle Wheeler, who won Academy Awards for his art direction of *Gone with the Wind*, *Anna and the King of Siam*, *The Robe*, *The King and I*, and *The Diary of Anne Frank*; Carlo Rambaldi, the mechanical effects expert who created the monster of *Alien* and title character of *E.T. the Extraterrestrial*; Frank Leonetti, president of Leonetti Cine Rentals and a pioneer in the fields of motion picture cameras and lighting systems; Gerald Graham, a Life Fellow of the SMPTE and winner of the Grierson International Gold Medal for Achievement in Documentary Film Production; Admiral Alan B. Shepard, America's first man in space and one of the astronauts who walked on the moon, who is in charge of research and development; and Walter Mitchell, founder and chairman of Temcor.

Gentleman believes that situating the facility in the Houston area will provide "a valid contribution to a research-rich area seeking an economic diversity of interest." He added that "the studio is poised to introduce further new age radical technologies which include three-dimensional viewing of motion pictures without the need of special viewing devices on the part of the theater audience. Further distribution and exhibition technologies are slated to develop from this area of operations as part of an on-going research function to set up 'experience' theaters.

Eppolito and Gentleman make it clear that the studio would not only be available for the use of outside production companies, but that in-house projects will be developed as well. Several story properties and scripts are being developed as part of the second phase of studio activities. ■

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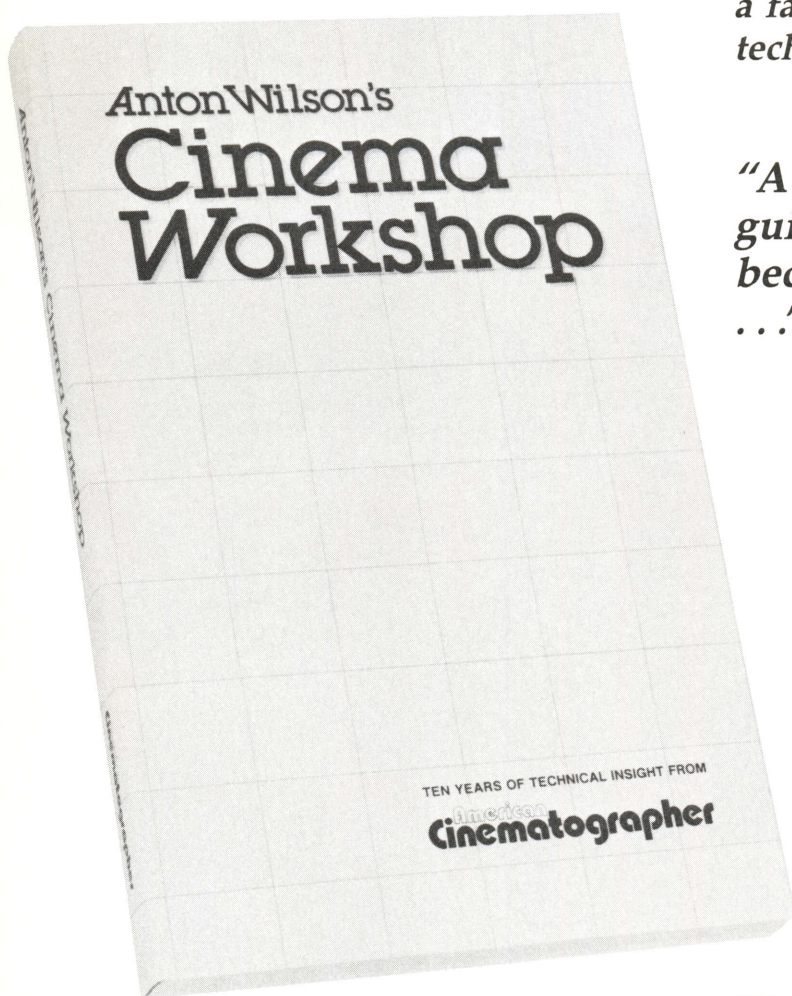
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Computers in the Editing Room

by Bob Lasiewicz

Why use a computer for logging key and edge numbers when it's been done by hand for half a decade? According to assistant editor Louis Benioff, "The ability to track the negative location of shots selected for a film or compiled into select rolls can easily become a problem. A computer can definitely help in these and other areas."

Miccomputer systems have already been created to help automate film editorial work. Benioff developed a program for *The Right Stuff* production team that generated a flexible code book and assisted in producing ADR and script supervisor's notes. Wolfgang Bayer of Jackson Hole, Wyoming, commissioned a program to track his 500,000-foot library of documentary footage; and screenwriter Paul Golding has written a package of commercially available programs for film, sound and looping editors.

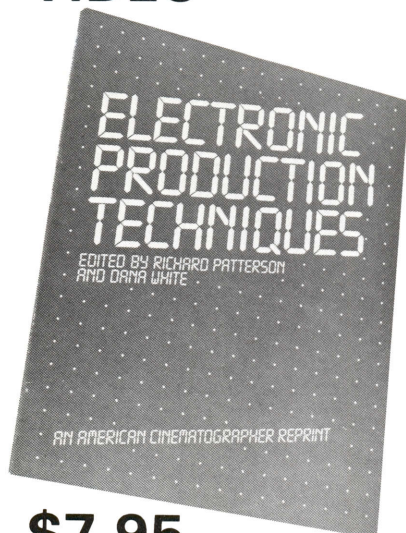
The three packages being discussed in this article were written within the last three years using an "off-the-shelf" database program called "dBASE." The experiences of the developers give insight into the special problems involved in creating such specialized programs.

As assistant editor on *The Right Stuff*, Benioff was faced with more than 2,750 edits and the cataloging of over a quarter million feet of stock and new footage. Prior to his position on this film he had put together a small computer system for producer Walter Murch that was used on *Dragonslayer*. Benioff had a background in math and science but had not studied programming other than an introductory "main-frame" course in college. For *Dragonslayer* he wrote a basic program that was used to catalogue sound effects and generate loop-

8/23 Beat Street PG		REEL: 1 L.F.O.A.: 600' 8 Tail Sync: 603' 8		PAGE: 1	
DIAL A	DIAL B	DIAL C	FX A	FX B	FX C
BEEP at 8' 12' 3					
Kenny Hey Chollie!			12' 5 Bell (S-09821)		23' 0 Hum
	34' 2 CHOLLIE				
45' 0 Where is he?		44' 5 TONE	FADE 55' 0	45' 2 Shot! (-20)	
				56' 0	
	FADE OUT 67' 8				
	88' 4 CHOLLIE (Shouts)				
99' 11	126' 10			126' 10 Second shot	
140' 13 Kenny Don't go!	NO!			141' 0	
	173' 3				
			195' 12 Car horn (S-008992)		
			206' 5		
226' 10 (Coughs)					226' 15
		236' 10 BUZZ			
273' 14					274' 2 Tone
			326' 10 Bell	328' 10 Third	
335' 10 KENNY No way			341' 12	343' 10	372' 10

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ing scripts and other documentation to assist in the ADR process.

His "Right Stuff" system was developed to aid the editorial staff in the initial cataloging and subsequent retrieval of stock footage information. This system was later expanded to include other areas - negative continuity, script supervisor's notes and so on. Benioff put together a hardware system consisting of a Northstar computer, TeleVideo terminal, letter quality printer, and 20 megabyte hard disk.

As stock footage was acquired, relevant information such as roll number, footage location, edge code numbers, source, shot description, format (everything from 16mm to videotape) and print condition were recorded. "Entering information can be very time-consuming" cautions Benioff. "If you don't make it a priority it can get away from you. You'll probably scrap the system halfway through the film because the computer reports are not complete and no one will trust them." As shooting began, information was also kept on the shoot date, camera and lens used as well as negative and work print locations.

Benefits began to emerge as early as pre-production. When given a request for available stock footage on the launch area around the base of an Atlas rocket, for example, the computer would provide a list of all such footage, complete with descriptions and where it occurred in each roll. Wasting time looking at close but inappropriate footage was eliminated. This search capability was utilized by the director, director of photography, costume/makeup/prop departments and many others.

"Unfortunately, there is one weak link here," admits Benioff. "There is never enough room for the description in "dBASE". So if someone enters an abbreviation for a word to save space and a search is done by the whole word, the machine won't find it." A library of common terms can help standardize descriptions.

As shooting proceeded, script supervisor's notes were incorporated and became available along with the other information. Fundamentally, once the basic data was entered, the computer organized it into different reports

and lists. Here are some examples:

- Stock footage was organized by category and roll, in printed or latent code order.
- First unit, second unit, and special effects footage could be listed in printed or latent code order. This included camera and lens information as well as work print locations. Slates were by scene with box numbers and Cine-tabs could be printed for the Moviola editors.
- Script supervisor's notes were printed with roll, box, date, lens and other information.
- Negative continuities were provided in cut and latent code order.
- Select rolls of each type of footage for all five editors could be listed in order by roll or as a master list. This made putting away trims much easier and helped avoid sending a trim back to its original roll rather than to the correct select roll. An editor could easily request and get footage from another editor's select roll much easier.
- ADR support was provided after the dialogue, character name, reel and footage information was entered. Along with creating Cine-tabs for the assistant editors, lists were generated by character, reel, scene and other combinations to assist the editor, director, talent and mixers.
- Sound effects were catalogued in much the same manner as film footage.

"There is a trade off in the value of information," explains Benioff. "For example, it might be helpful to have a list of all the latent codes for the final cut of the film in latent code order. This would help the assistant locate cut back frames and the negative cutter to see where and how many times a certain negative roll is used. In the past this would've been a Herculean task and not worth the time and effort. With the aid of a computer, that information is easily generated."

Benioff says "The major stumbling block I've found in "dBASE II" is the time it takes to keep multiple indexes [pointers that can speedily locate information] active, and the limitation on the length of descriptions and some other types of information."

These issues are significant because they can greatly enhance or detract from the performance of a system. A database program developed by filmmaker Wolfgang Bayer illustrates the common problems.

Bayer has been filming nature-oriented documentary footage since 1966, with exposure on National Geographic specials, *Lorne Greene's Wilderness* and *Wild Kingdom*. In 1973 he started his own company and began building a private collection of stock footage. "As the library grew to it's present size of a half-million feet it became harder and harder to locate a particular shot," recalls Bayer. "About three years ago we started cataloging on paper but couldn't easily find a particular piece of footage by subject or edge number. It still depended primarily on what my editor and I could remember.

"I tried to write a computer program myself since I have a background in electrical engineering, but it was just too time-consuming," explains Bayer. He eventually hired a programmer from Ashton Tate [the developers of dBASE II and III] to design the cataloging program for him. The program took about a year to complete and ended up costing four times more than Bayer had anticipated spending.

Bayer's program is designed to retrieve footage that has been catalogued by subject, location or environment. Environment refers to time of day, activity or some other significant information. It was necessary to incorporate a dictionary of specific terms into the program to insure the reliability of the searches. After entering the criteria for a specific search, the machine wades through all the information on file for each section of footage.

Program processing time can become significant for operations in Bayer's program. If a printed listing from a particular production or roll is required, or the location of a small group of edge numbers, the process



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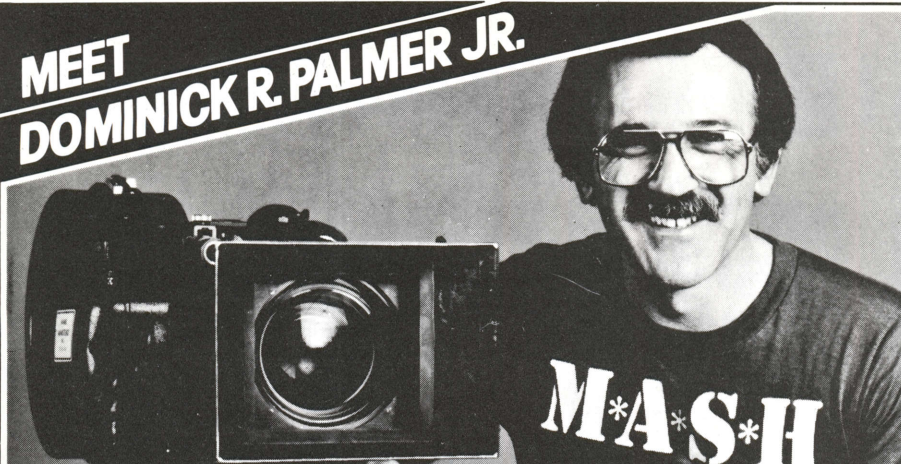
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may only take minutes. However, the printouts of these quick listings are available only in film and roll number order. If they're needed in any other order, such as subject, location or environment, a new index must be built and this can take hours. An on-screen search by any of these criteria can also be time consuming. Once the full listings are compiled, however, the gains in pulling clips and conforming negatives offset this problem.

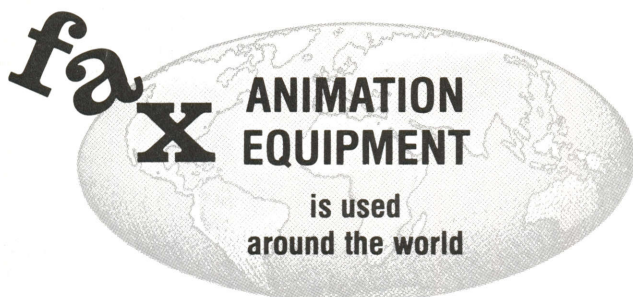
"My editors and negative cutters all tell me how much easier this has made their work. And pulling from AB rolls is also much quicker," says Bayer. "In addition to the shots that match whatever criteria is selected, the system provides us with a summary of each production and roll number that contains any of the selected footage. This makes pulling from the library a snap!"

Both Benioff's and Bayer's computerized editorial systems were put together for specific projects, and each requires knowledgeable users in certain aspects of their operation. A new set of generic programs for post-production editorial are currently being sold. The ADR, LOG and CUE programs are authored by ex-physicist and screenwriter Paul Golding. (Orion's *Beat Street*, Disney's *Secret of Lost Valley*.)

Prior to 1984, Golding had already been using a computer for a couple of years to write scripts. Loop editor Jere Golding, Paul's wife, asked if there was a way the computer could help her. He wrote a program called ADR which could print a reel's worth of ADR cue sheets, automatically recalculate the footages to cope with last minute conformations, and even deliver individual pages for each character. Successful installations include *St. Elsewhere* and several movies-of-the-week.

During Golding's work on *Beat Street*, sound editor Bern Hadjienberg asked if a program could be written to help build sound reels and to assist in the mix (where last minute picture conformations can drive an editor crazy). Golding created CUE. The initial version of the program had a baptism by fire when the picture editors sent a list of eight conformations for a reel that was due on the stage the

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This first version of the system printed out footage labels which were then added to standard cue sheets. A new version called "XCUE," now in final testing, draws the complete tracking sheet from scratch. The program is limited to 40 tracks across and 40 effects per track. In addition to footages it prints character names or other comments at the beginning as well as any designated mid-point during an effect or dialogue track. Conformations can be made to effect a single edit or the whole track.

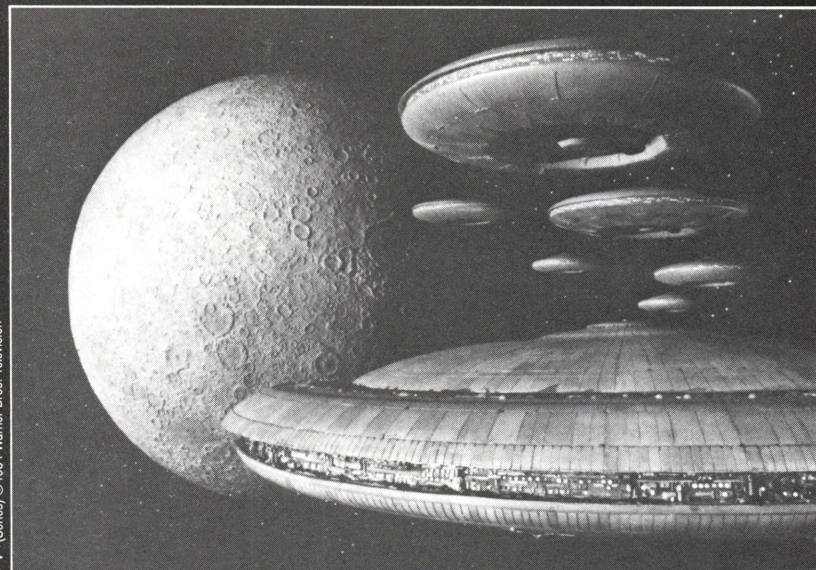
Golding has also written "LOG" to manage a film's codebook. In addition to tracking code numbers, a somewhat limited 35 character description, and roll and key numbers, "LOG" also keeps track of the printer light and which camera the shot was filmed with (for multiple camera shoots). When entering multiple shots, information such as date, description, roll number, printer light and first key and code number can be automatically inserted with only a few keystrokes.

When it comes to searching for specific shots in all three of the logging programs mentioned, "LOG" provides the most flexibility for the novice user. The program can find shots through searches related to all the information stored about them, except for printer light.

The operator has a choice of displaying information on the screen or printing it out. The criteria for the listings are also flexible. Other program features include printing standard Cine-tabs and continuity listings. These are generated by entering edge code numbers. Up to 64 listings can be created, stored and edited.

Golding has included several nice features that safeguard the user. The edge code numbers can be verified to make sure there are no duplicate code numbers and that every subsequent shot in a roll has a higher number than the last. At the end of every session it also checks to see if any new shots have been entered. If so, you must back up at least those new records before leaving the program. Backup of the whole logbook is automatic and straight forward. The documentation for

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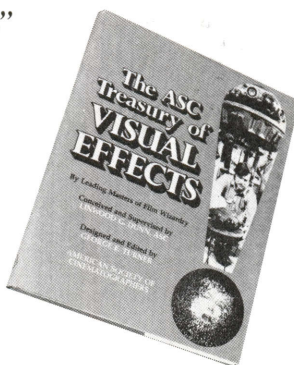
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the system is thorough and easy to understand.

Unfortunately, it shares a similar problem with the others – the order of printouts. Listings will be in order by code number unless you have taken the time to re-index by either scene number, key number, or date (these being the other indexes available). Also, the search time for certain multiple criteria is significant. Finally, consistency in your entries is a must with this program.

When looking at any program to automate your work it's important to make sure it has all the features that you require. Make sure you've seen it run, or even operated it yourself on a segment of test data of your own. And when it comes to logging programs such as these, make sure you can live with the processing time that searching and indexing may demand.

These post-production software packages join the ever increasing swell of new microcomputer products for use in television and film production. If you would like to see demonstrations of Paul Golding's "LOG", "XCUE", and "ADR" programs, as well as other computer tools for scriptwriting, budgeting, scheduling, production accounting and more, a good place to start is the upcoming "ShowBiz Expo '85" June 27–29 in Los Angeles. Companies will be displaying computer hardware & software, high-tech office systems and a variety of business services that address the automation and business needs of the entertainment industry. Three days of software screenings will also be held for large screen viewing of the computer programs. For information on the program and exhibits, contact ShowBiz Expo '85 at 3747 Arbolada Rd, Los Angeles, CA 90027, or call (213) 668-1811. ■

Bob Lasiewicz is president of Live Time, Inc. sponsor of the Director's Guild Computer Series, hands-on training classes and the upcoming ShowBiz Expo '85 in Los Angeles. He is currently consulting for Telepictures Corporation and is managing the development of a custom database program and minicomputer installation for them.

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Lighting for High Production Value Video



Steven Hutton

Bruce L. Finn lines up shot with Ikegami camera.

by Bruce L. Finn

Video is a unique and highly sensitive medium. To attain the most desirable results on tape one must respect the individual properties of video. Beautiful images can be made on tape. However, video can be a very unforgiving medium without strategies that mesh with its inherent latitudes.

The matching and balancing of the color of light sources becomes critical when we study the ability of video to reproduce even slight color temperature differences. Some traditional treatments of color balancing for film are less desirable for video.

In that video can effectively reproduce white in a broad range of color temperatures without complex lens filtering provides advantages in working at unconventional color temperatures. However, the sword is two-edged in that although we can quickly balance to many given sources individually, the uniformity of the temperature we choose is critical.

In a situation where the light sources in the frame are of different color values (due either to themselves or instrumentation or both) balancing sources to attain a uniform working temperature quickly and efficiently is desirable.

Determining the working color temperature that will most effectively fulfill desired aesthetic goals depends on many variables. Choosing the color strategy is of primary importance and can be more difficult than actually performing the light source corrections.

Here is an example that illustrates the process and some practical techniques of color balancing for video:

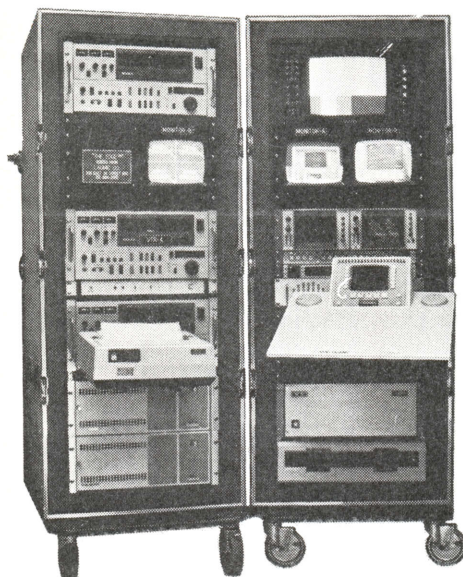
The location is an auto assembly plant, the shot is very wide and taken from a high angle, and a great deal of background is involved. Starting from the background forward we see a solid neutral colored wall. The mid-ground is the assembly line itself with robots welding parts along its path. The foreground is a work area with the actor head to toe speaking to camera position. The 50-foot ceiling is strung with low pressure sodium vapor fixtures. The ambient light level falling on objects is 32 foot candles. The foreground is strung with cool white fluorescent hanging fixtures (work area). The level is 64 foot candles combined and two banks appear in our frame.

It is necessary at this point to look at the full picture to access the options. Here are some common considerations:

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		L: 202	L: 201	
HMI (5600k)	L: 236	R: ½ CTO	0	
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	MTY			
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Working				
Temperatures				
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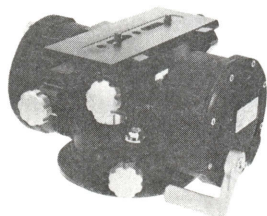
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- Aesthetic considerations;
- Overall lighting plan, continuity.

In this particular example we are well equipped with power, instruments (both HMI and tungsten) and crew. The production value of the overall show enables us to go for a high level of quality in the image.

Looking at the variables as a whole, the biggest consideration is the brightest and most apparent source: cool white fluorescents. Under these circumstances, if instrumentation is added at a color temperature of 3800 degrees kelvin the brightest existing source can be used as a base to build on. Because we are slightly under-correcting for cool white fluorescents, the on camera sources will appear a natural, slightly cold tone. In bringing tungsten up to 3800 degrees kelvin with tough ½ booster blue (Rosco Cinegel) and HMI's down with RoscoSun ½ CTO, we can match our own instrumentation well while retaining a good level of transmission from both types of sources. In this situation we used a series of tungsten open-faced 2ks in the frame but flagged by the line itself to bring up the background. Our midground was lit from behind the camera with the highest output HMIs. The foreground was lit with lesser output HMIs with the exception of a 2k open-faced tungsten instrument hung as a backlight for talent.

All added instruments were brought to 3800 degrees kelvin with the formerly mentioned gels.

When mixing light color (as with the existence of sodium vapor fixtures in this example) overall light level becomes critical in minimizing the proportional effect of the existing source. In this situation our poor spectral distribu-

tion sodium vapor sources were minimized with a sufficient quantity of added light.

White balancing position should be a consideration also. Final white balance was performed in the most critical position for skin tone (talent position). When using 3800 degrees kelvin as a working temperature for video it is possible with most of the high end cameras to attain white in the A or clear camera filter position. The result is minimum transmission loss at the camera end.

The technique of color matching as outlined in this example has proved to be a pleasing and efficient means towards attaining a high quality video image in this situation. However this is one of countless situations, each with its own unique properties.

A very common situation is the office interview in an interior with recessed cool white fluorescents in the ceiling as the only pre-existing source. Sans windows or other variables and given that we are equipped with tungsten instruments only, I prefer to work at 4300 degrees kelvin. Bringing tungsten up to 4300 degrees kelvin with Lee # 202 gives a very accurate match to most cool white fluorescents commonly found in office buildings.

Many offices have a high ambient light level as well as horizontal reflective surfaces such as desk tops, CRT's etc. Therefore it is important to match the overhead cast closely. Although the transmission of Lee # 202 is less than if we worked at 3800 degrees kelvin, sufficient output is rarely a problem in a small setup with a good field package. In this situation, 3800 degrees kelvin is less attractive due to the fact that we aren't balancing HMI's and that we don't have rationale for a cold cast by a practical source.

It is reasonable to use pre-existing sources as a base for lighting strategy on many occasions. In both given situations we have taken full advantage of the existing base light, giving an efficient and pleasing lighting strategy.

Although acceptable color rendition is possible at many points along the spectral scale, there is danger in using the technique of balancing to the existing source as a rule. Some existing sources are of such a narrow



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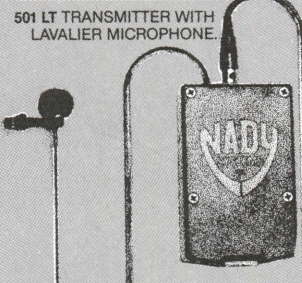
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spectral nature that we are unable to make full video white with these sources. Low pressure sodium fixtures as a common industrial example give us an inadequate working color temperature. Gelling instruments to match this essentially monochromatic source would be unacceptable. In this situation common practice dictates overpowering the existing source with the closest "full" color temperature source (3200 degrees kelvin).

HMI's have been particularly useful in their ability to lose transmission through the application of color control media and still retain high output versus amperage drawn. Careful attention is needed when color matching HMI's in that they cannot be filtered as standard "daylight." An 85 is an ineffectual medium for bringing HMI's down to match a tungsten source. Both Rosco Tough MTY and Lee #236 are good color correction gels to bring HMI's with their inherent ultraviolet properties down to match tungsten sources.

Lighting for high production value video is a fascinating craft. Flexibility in method and, above all, individual treatment of the medium that respects its nature, is the order of the day.

Bruce L. Finn is a cameraman/lighting director specializing in high production value shooting for commercial, corporate and broadcast teleproductions. He is based in Boston and travels extensively.

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Silverado may not be all of that, but it will be the cover of the July *American Cinematographer*. Samir Hachem interviews John Bailey, cinematographer.

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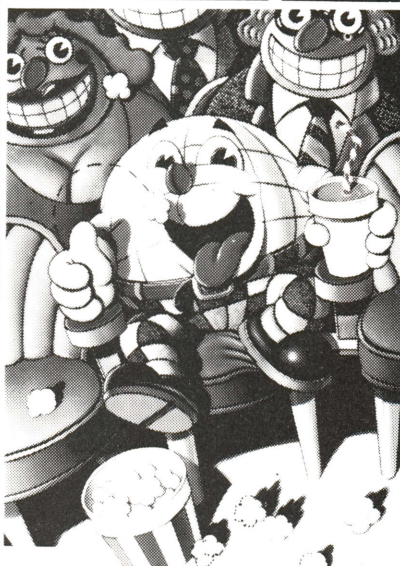
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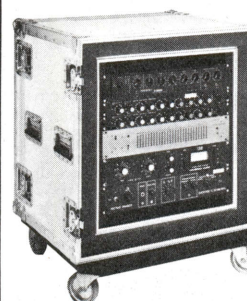
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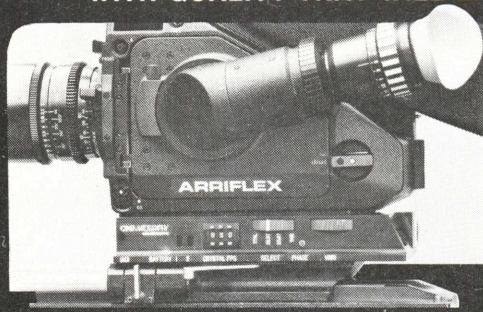
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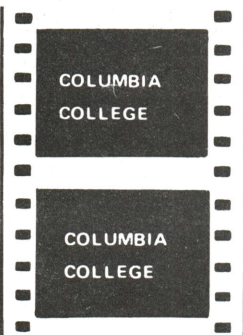
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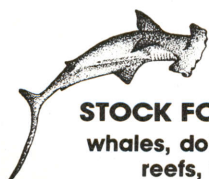
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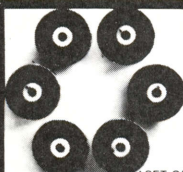
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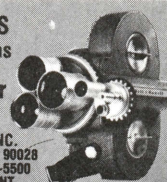
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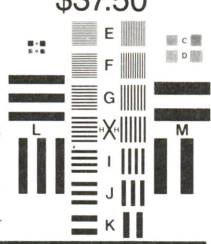
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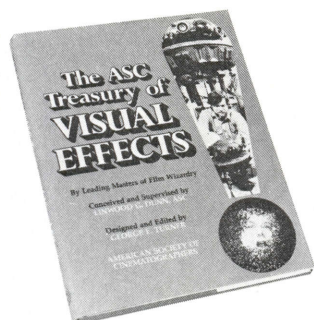


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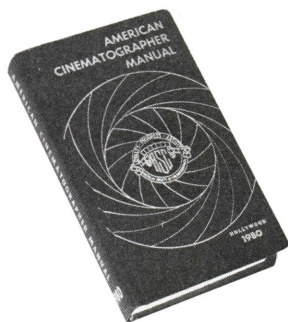


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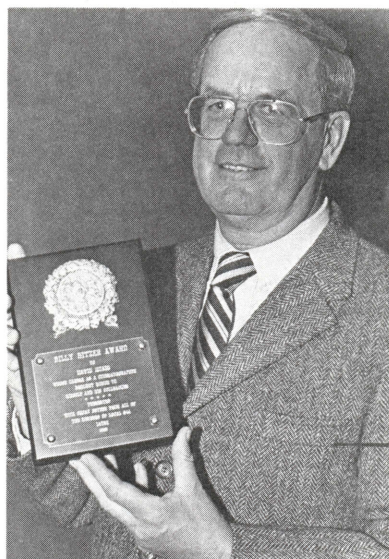
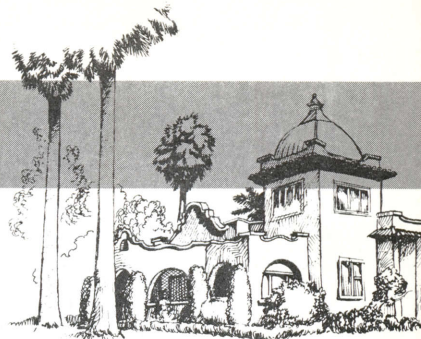
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From the Clubhouse



David Quaid, whose home is in Massachusetts, has become the latest cinematographer member of the A.S.C. Quaid has been in the business since 1939 when he began as a freelance newsreel cameraman. He has been a director of photography since 1962, working on such features as *the Swimmer*, *Pretty Poison*, and *Cops and Robbers*.

He is perhaps the best known for his documentary work and says: "During the next two years I hope to complete work on two documentary films. One concerns an hour long television special on "Merrill's Marauders", the legendary Ranger unit which fought behind Japanese lines in Burma during World War II. While with them as a combat cameraman, I photographed 27 minutes of cut footage of the operation. I am in the process of locating and interviewing the same men today as may be seen in the combat footage of 40 years ago."

Quaid is working to attain his Master's Degree in Fine Arts. He says of that goal: "I am only too aware that many students who take communication arts courses fail to find a place in our industry—a terrible waste of talent and education. I intend to produce a survival manual for these kids as part of my master's project."

As a feature of the evening when cinematographer Oscar nominees were honored recently by Eastman Kodak, Oscar winners from the past were also saluted.

The five nominees of the current Academy Awards year, Ernest S. Day, BSC; Caleb Deschanel, ASC; Chris Menges, BSC (winner); Miroslav Ondricek, Czechoslovakian cinematographer; and Vilmos Zsigmond, ASC—all received crystal sculptures to commemorate the occasion.

Honorees from the past included John Alcott, BSC, 1975 (*Barry Lyndon*); Arthur Arling, 1946 (*The Yearling*); Joseph Biroc, ASC, 1974 (*The Towering Inferno*); Floyd Crosby, ASC, 1931 (*Tabu*); Daniel Fapp, ASC, 1961 (*West Side Story*); Conrad Hall, ASC, 1969 (*Butch Cassidy and the Sundance Kid*); Fred Koenekamp, ASC, 1974 (*The Towering Inferno*); Milton Krasner, ASC, 1954 (*Three Coins in the Fountain*); Charles B. Lang, Jr., ASC, 1932 (*A Farewell to Arms*); Joseph LaShelle, ASC, 1944 (*Laura*); Haskell Wexler, ASC, 1966 (*Who's Afraid of Virginia Woolf?*), 1976 (*Bound for Glory*); and Vilmos Zsigmond, ASC, 1977 (*Close Encounters of the Third Kind*).

David Quaid, ASC

From left: Fapp, Zsigmond, Arling, John McDonough, program host, Krasner and Hall.



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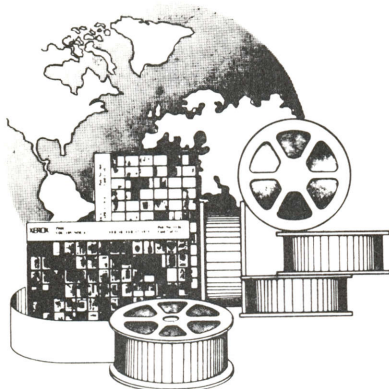
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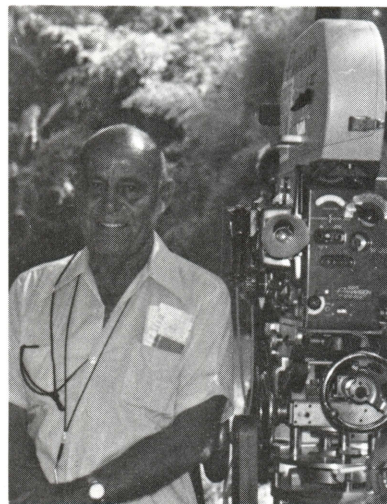
John M. Nickolaus Jr., ASC, who worked at every major U.S. studio during his 52 years in the motion picture industry, died February 10 in Malibu.

His father, John M. Nickolaus Sr., was one of the first movie cameramen at the old Nestor Film Company in Bayonne, New Jersey in 1910. Shortly after the birth of John Jr. on May 18, 1913, the family moved to Hollywood. The elder Nickolaus remained in the film industry until he retired in 1955.

John Jr. started his movie career at Metro-Goldwyn-Mayer in the film lab and soon secured work as an assistant cameraman. He became an operator in 1941. At MGM he worked for George Folsey, ASC, Joseph Ruttenberg, ASC, Henry Sharp, ASC, John Alton, ASC, and Paul Vogel, ASC. Late in 1941 he was assigned to Charles Rosher, ASC, and remained as his operator for 14 years. For a while he specialized in the Technicolor underwater photography of the Esther Williams pictures.

After Rosher retired, Nickolaus entered the independent field, becoming a director of photography in 1955. He was in charge of photography for Robert L. Lippert's production unit at Twentieth Century-Fox, where in 1957 and 1958, he shot *Apache Warrior*, *Under Fire*, *Young and Dangerous*, *Ghost Diver*, *Ambush at Cimarron Pass*, *Thundering Jets*, *Gang War*, and *Showdown at Boot Hill*. At Allied Artists he made *Hot Car Girl* and, at Republic, *No Place to Land*.

His work for Fox continued into the 1960s with *Young Guns of Texas* and *Air Patrol*, both in 1962, and in 1963, *Police Nurse*, *The Day Mars Invaded Earth*, *House of the Damned*, *Harbor Lights* and *Thunder Island*. He had become increasingly involved in television work by this time, and in 1961 he returned to MGM to



photograph 93 one-hour episodes of the *Rawhide* series, parts of which were filmed on location near Tucumcari, New Mexico. For Paramount he shot 40 episodes of *The Outlaws* in 1963, as well as 13 segments of *The Outer Limits*. In 1964-65 he made 30 episodes of *The Travels of Jamie McPheeters* for MGM. At the CBS-LaBrea studio he filmed 60 of the *Perry Mason* adventures beginning in 1966. He next began a long stint with Twentieth Century-Fox Television on *Peyton Place*.

More recently he worked on such series as *Room 222*, *Judd For the Defense*, and *The Waltons*. For Irwin Allen he shot several features for television: *The Night the Bridge Fell Down*, *Crisis in Mid-Air*, *Cave-In*, *Hanging By a Thread*, and *The Memory of Eva Ryker*.

Nickolaus, a victim of cancer, was 71. He is survived by his wife, Marie, a daughter, Karen Wilson, and granddaughters. He had been an active ASC member since 1966. ■

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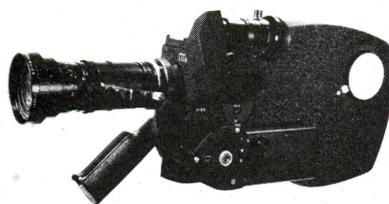
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Ted Voightlander, ASC, gave up a career as a pianist to have a go at cinematography. Since then he has received 14 Emmy nominations and won three Emmys (for It's Good to Be Alive, The Fighter and The Craftsman). His credits include two years of The Wild, Wild West, the current series for Michael Landon, Highway to Heaven, The Diary of Ann Frank (remake) and Sam's Son.





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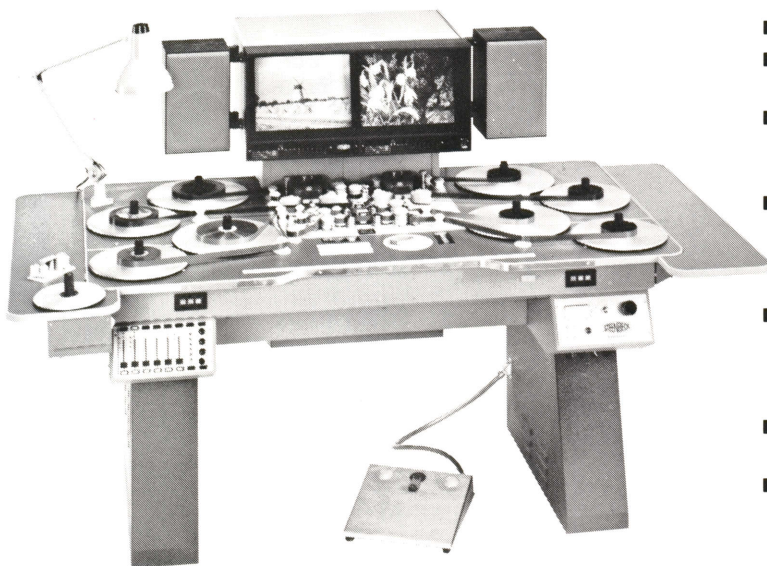
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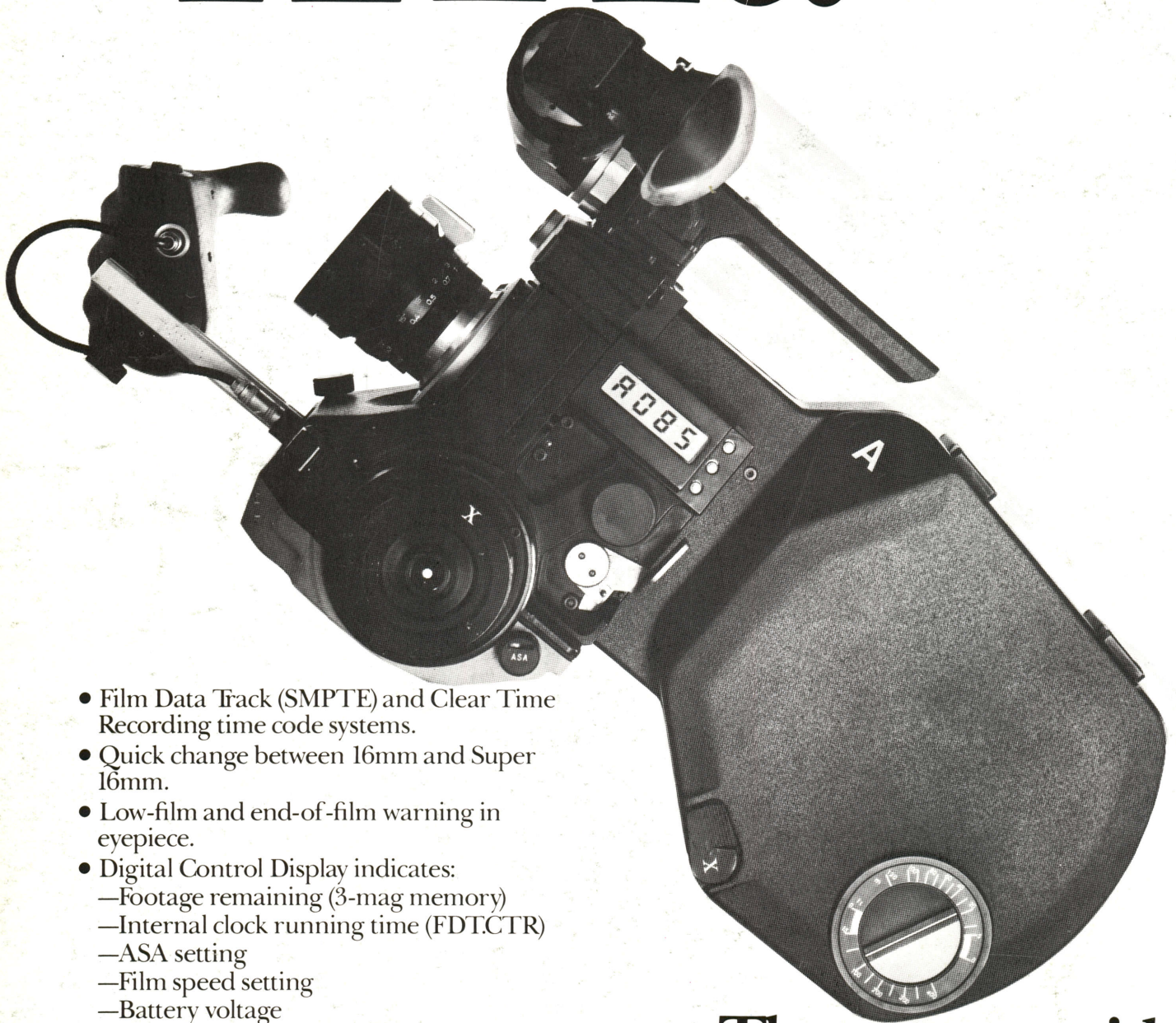
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